

**THE RELATIONSHIP BETWEEN READING DIFFICULTIES AND ACADEMIC
PERFORMANCE AMONG A GROUP OF FOUNDATION PHASE LEARNERS
WHO HAVE BEEN:**

- 1) IDENTIFIED AS EXPERIENCING DIFFICULTY WITH READING AND**
- 2) REFERRED FOR READING REMEDIATION.**

by

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**Submitted in part fulfilment of the requirements for the degree of M Ed (Ed. Psych)
in the Department of Educational Psychology at the University of Zululand**

SUPERVISOR : PROF. D.R. NZIMA

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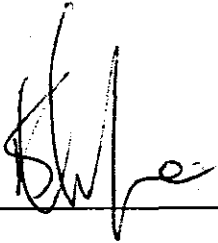
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STATEMENT OF DECLARATION

Unless specifically stated to the contrary in the text, this thesis is the original work of the undersigned.



Bronwen Oberholzer

I hereby declare that this thesis / dissertation has been submitted for examination with / without my approval.

Prof D.R. Nzima

(Supervisor)

ABSTRACT

Reading is generally considered to be a critical skill, both within and beyond the walls of the classroom. Its importance for academic success within a school is unlikely to be contested by many people. Reading is well-integrated into our education system generally, such that educational or academic success is almost synonymous with reading success. With this in mind, the purpose of this research was to examine the relationship between reading difficulties and academic performance. To this end a group of Foundation Phase learners were selected on the basis of having an already identified reading difficulty. Using data from their school academic progress reports and from a scholastic assessment carried out by an educational psychologist, correlations were calculated between the learners' reading ability and academic performance. The research findings showed no significant correlation. These results were not in line with the general opinion supported by the literature, in that the children's reading difficulties did not appear to be impacting negatively on their academic potential. Various factors are discussed as possible explanations for this phenomenon.

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CHAPTER ONE

OVERVIEW OF THE STUDY

1.1 Introduction

For most people living in today's modern world, reading is an everyday, ordinary task to which little thought is given. Yet reading is one of the most important skills that we can acquire (Grove & Hauptfleisch, 1982). Reading is not simply about mechanical skill. It helps us understand our world by enabling us to learn about our past and plan for our future. *Understanding* what we are reading is far more important to us than the mechanical skill of reading. Without comprehension, reading per se would serve no purpose. Likosky (Libretto, 1985) notes that reading brings us into contact with our culture and the values and principles adhered to by our community. It can help us develop our own ideas about relationships (Smith & Robinson, 1980). It includes the world of thoughts and emotions (Frank, 1960). "A person who can read well, can function more effectively in everyday activities and can satisfy his emotional and intellectual needs more effectively" (Grove & Hauptfleisch, 1982:1). Many of our day-to-day tasks require reading, including the simple tasks of banking, following directions and shopping. For an illiterate person, many of life's seemingly mundane and ordinary tasks, which many people take for granted, become insurmountable hurdles.

1.2 Motivation for the study to be undertaken

Living in the 21st century with its rapid advancement in technology, we are faced with the so-called 'information explosion' or 'information overload'. Some of this information comes to us via the electronic media such as television and radio, for which reading is not required. But much of the information comes to us in the form of the written word such as books, newspapers, magazines and computers. The worldwide web, specifically, has made masses of information easily available to people who have access to the internet. E-Mail has transformed the world into a global village by making electronic media an effective global form of communication. Advances in computer technology have been, and continue to be, rapid. An array of software packages provide information on a wide variety of topics. In order to be able to process all of this information, reading is a prerequisite skill.

The value of reading is unlikely to be challenged by many people. It is so much a part of modern society that most people would acknowledge its importance. Reading is well-integrated into our education systems generally, such that educational success is almost synonymous with reading success. It pervades almost all work that is done in the classroom and according to Greyling and Joubert (1988) there is a direct relationship between successful studies and good reading skills. Reading is probably one of the most important skills that a child learns at school, if not *the* most important. It forms the foundation for all further learning and without the ability to read effectively, a child will experience difficulty learning. "Success in reading very often ensures success in other subjects, as a sound reading ability is the gateway to the acquisition and expansion of knowledge in all the school subjects" (Grove & Hauptfleisch, 1982:1). An inability to read will impact negatively on the ability to achieve in all other school subjects, as well as on the ability to succeed in

life beyond school. This will have a strong influence on the child's self-esteem and on his perception of himself as a student which, in turn, will have an influence on his subject-choice as well as on his choice of career (Brown, 1982). Anderson, Hiebert, Scott and Wilkinson (1985:1) describe reading as "a basic life skill. It is a cornerstone for a child's success in school and, indeed, throughout life." This sentiment is supported by Grove and Hauptfleisch (1982:1) who state that "Reading to learn is becoming more and more important in that it creates almost limitless possibilities for achievement."

For many children reading comes so naturally and easily that little thought needs to be given to the actual process of reading itself. For them reading is about the search for meaning and understanding and not about the mechanical task of forming letters into words and words into sentences. Yet despite the perceived importance and value of reading and despite the efforts of hundreds of teachers across the country, there are many students in our schools with inadequate reading ability. These are the children for whom reading is a struggle. For them, instead of providing meaning, words create confusion.

Children with reading problems have to focus so much on the mechanical aspects of reading, such as the analysis and synthesis of letters and words, that the meaning of the word becomes secondary and sometimes may even be lost. Under these circumstances very little pleasure is gained from reading. Instead it becomes a laborious task, which leads to feelings of failure and anxiety. These children simply do not develop a love for reading and the written word is inaccessible to them. They generally need some extra assistance, which usually takes the form of reading instruction in the classroom as well as a supplementary programme such as remedial reading (Gelzheizer & Meyers, 1991).

Reading is a skill that needs to be taught and it is viewed as a priority in the primary school curriculum (Grove & Hauptfleisch, 1982). In Grade 1 in South African schools, children are taught to read so that by the end of that first year of formal schooling most children are able to read an age-appropriate book, unaided. In our schools formal reading instruction takes place in the Foundation Phase, but once the children reach Grade 4 no further reading instruction is given within the classroom. At that point it is assumed by the teachers that the children have mastered the basics of reading. There are, however, Grade 4 children who experience difficulty reading. In this regard, Snyder (1979) states that developmental variations in reading skills should be accepted and that because reading skills are measured relatively and not absolutely, the problem of the relatively poor reader will persist.

It is true that variations in reading level will occur amongst children of the same chronological age. What is important, however, is that each child be assisted and encouraged to attain a reading level, which enables him to achieve his full potential. Also important is that the child develops positive feelings about reading itself. The role played by both the teachers and the parents is crucial here. In a review of research by Becher (1985) it is evident that the example set by parents who read and also the extent to which they make books accessible to their children, can instill a positive attitude towards reading in their children. Teachers and parents can create an environment in the classroom and the home, respectively, which is conducive to and which encourages reading. Their approach can be instrumental in fostering a love for reading within the child.

However, reality also dictates and in the case of the reading disabled child, much of the encouragement and assistance may have to take place within a remedial setting. Friedel and Boers (1989) state that it is logical to prescribe early prevention and intervention

programmes at primary school level in order to prevent pupils becoming at risk for reading difficulties. Unfortunately, the pressures of an education system which is in transition, as well as high pupil : teacher ratios in the majority of South African classrooms, make it almost impossible for a teacher to give individual remediation to a child, or to compile an appropriate remedial intervention programme. Similarly, time and work pressures on most of today's parents mean that they do not always have the opportunity or the motivation and, in some cases, neither the ability, to assist their reading disabled child.

If reading problems exist in our schools and if individual remediation for these problems is difficult within the average classroom setting, the question then arises as to how the academic performance of these children is being affected by their reading difficulty. As will be shown in Chapter 2, the general belief in the literature, and one that is largely upheld by parents and teachers alike, is that difficulty with reading can have an increasingly negative effect on the child's schoolwork and tertiary education, as reading requirements become greater and more extensive. The general trend in the literature is that reading is essential for learning and "if students have not properly mastered this learning tool their potential for success in the learning context is handicapped" (Bohlmann & Pretorius, 2002:205).

1.3 Statement of the problem

Further to the above, during the course of assessment and remedial work carried out by the researcher amongst a group of Foundation Phase children, at an ex model-C primary school in Gauteng, it became obvious that a number of these children had below average reading ability. At this school, at some point during their Foundation Phase schooling, a number of

children had been referred to the school's part-time educational psychologist for assessment of reading problems. In most cases, although not all, this referral had taken place during the child's Grade 1 year. Following assessment, the majority of these children were referred for reading remediation, which took the form of one half-hour session per week, during school hours, with a remedial therapist.

Even allowing for developmental variations as mentioned above, relative to their age and grade these children should have been able to read at a specific level of mastery. An inability to read at this level had grave implications for future academic success. The later shift to the Intermediate Phase in Grade 4, placed much greater demands on the children in terms of reading ability as they broadened their focus from mainly reading, writing and arithmetic to include specific subjects. Foundation Phase reading skills became a critical factor to successful learning.

There existed among the teachers at the Intermediate Phase a concern at what they perceived to be generally poor reading ability amongst the Foundation Phase children at the school. Teachers at the Intermediate Phase were finding that a number of children coming in to Grade 4 from the Foundation Phase, were experiencing difficulty reading, especially with regards reading comprehension. For a number of these children, this was then manifesting as academic difficulties as they were unable to fully understand the written content of their varied subject material.

The concern resulted in meetings being called by the Headmaster and the relevant Heads of Department. Attending these meetings were, amongst others, the teachers of Grades 1 – 3 and Grades 4 – 7, as well as the educational psychologist involved in work at the school.

During the course of these meetings, decisions were made regarding what action should be taken at each grade level, in terms of specific reading skills, in order to improve the overall reading ability of the children.

1.4 Research questions

Through the researcher's attendance at these meetings, as well as through observation of learners and exchange of views with teachers, it became pertinent to investigate the relationship between the reading difficulties and the academic performance of these children.

Given the concern about what was perceived to be generally poor reading ability amongst the Foundation Phase children at the school, the following research questions arose:

- 1.4.1 What is the nature of the relationship, if any, between the child's poor reading ability and his ability to reach his academic potential?
- 1.4.2 What is the nature of the relationship, if any, between the child's poor reading ability and his ability to succeed in mathematics?
- 1.4.3 Do the differing skills required for efficient reading have a differing influence, if any, on the child's ability to reach his full academic potential?

1.5 Aims of the study

The aim of the study was three-fold, namely:

- 1.5.1 To investigate the extent of the correlation, if any, between the reading ability and academic performance of a specific group of Foundation Phase children.
- 1.5.2 To investigate the extent of the correlation, if any, between the reading ability and mathematics achievement of a specific group of Foundation Phase children.
- 1.5.3 To investigate the correlation, if any, between 3 aspects of reading (namely, speed, accuracy and comprehension) and the academic performance of a specific group of Foundation Phase children.

1.6 The research hypotheses

Considering the general view that reading is important and that reading is a prerequisite skill for effective learning, and given the concerns expressed by the Grade 4 teachers, it appeared that reading difficulties were likely to have an adverse effect on academic performance.

Therefore, the hypotheses to be investigated were as follows:

- 1.6.1 There is a significant correlation ($p < 0,05$) between reading ability and general academic performance.
- 1.6.2 There is a significant correlation ($p < 0,05$) between general reading ability and achievement in mathematics.

1.6.3 There is a significant correlation ($p < 0,05$) between the three aspects of reading (namely, speed, accuracy and comprehension), respectively, and academic performance.

1.7 Demarcation of the field of study

The study was limited to a group of Foundation Phase children at an ex model-C primary school in Gauteng. The group of children had the following in common:

1.7.1 They had been referred to the educational psychologist by either their parents or teachers for a scholastic assessment due to reading difficulties.

1.7.2 The assessment had indicated that the children all had difficulty reading and were found to be reading at a level below that expected for children of their respective chronological ages.

1.7.3 They had been referred for reading remediation.

1.8 Clarification and delineation of concepts

In terms of the scope and context of this particular study the operational definition of terms was as follows:

1.8.1 Reading difficulty

The term 'reading difficulty' refers to problems associated with reading, whether it be with the mechanical skill of the reading process and/or the comprehension of what is read. Within the context of this study, reading difficulties were identified by the child's teacher who found that the child was experiencing difficulty with either reading accuracy, speed and/or comprehension. In each case it was felt that the children were not reading at a level expected of their respective chronological ages, given that there was no evidence of either significant cognitive retardation or obvious neurological pathology. Their difficulty with reading was causing them to fall behind in terms of reading requirements within the classroom.

1.8.2 Reading ability

The term 'reading ability' is a broad term for which one single, absolute definition is probably not possible. Depending on one's focus or area of interest, one individual might argue that reading ability has to do with accuracy, and that without accuracy reading will be ineffective. Another individual might argue that reading ability has more to do with comprehension, and that without comprehension reading becomes pointless. The fact is that the ability to read is based on a number of prerequisite skills, all of which need to be taught and mastered in order for a child to read effectively.

The Penguin Dictionary of Psychology, Second Edition (Reber, 1995:1) defines 'ability' as "the qualities, power, competence, faculties, proficiencies,... etc. that enable one to perform a particular feat at a specified time. The essence of the term is that the person can perform

this task *now*, no further training is needed... Ability is an individual's potential to perform". What is important is that ability has to do with how, and at what level, a child can perform a particular skill or group of skills at a particular point in time. All children have unique abilities, which will underscore and influence their potential. At the time of their respective reading assessments, the children included in the study were reading at a below-average level which, in fact, necessitated further training. Their below-average reading ability had the potential to undermine their academic performance.

Many measures exist to assess or measure reading ability. For the purposes of this particular investigation, the term 'reading ability' referred to reading fluency, accuracy and comprehension as indicated by the individual's reading scores on individually administered, standardised reading tests. These tests were, specifically, the One-Minute Reading Test (a measure of reading speed), the Burt Graded Reading Test (a measure of reading accuracy) and the Neale Analysis of Reading Ability (a measure of reading, speed, accuracy and comprehension). These were the measures used by the educational psychologist in his assessments of these children. These measures cover both the bottom-up decoding skills as well as the top-down comprehension skills needed for effective reading (to be discussed in more detail in chapter 2). From each of these standardised reading assessment measures, a reading age was calculated for each of the children which gave an indication of the level at which they were reading relative to their chronological age.

1.8.3 Foundation Phase

The term 'Foundation Phase' refers specifically to grades 1, 2 and 3.

1.8.4 Intermediate Phase

The term 'Intermediate Phase' refers specifically to grades 4, 5, 6 and 7.

1.8.5 Learner

The term 'learner' is used to refer to children registered at the school to attend classes. Note that within the context of this report the term 'learner(s)' will be used interchangeably with the term 'child(ren)'.

1.8.6 Academic Performance

Within the school environment, the term 'academic' refers to the intellectual and scholarly aspects of learning. Traditionally, successful academic performance requires that the children meet the promotional requirements of the particular institution at which they are learning (for example, passing examinations, tests, projects, assignments) and at the end of the academic year being promoted to the next grade level. It must be noted that academic success is just one aspect of a child's overall development. Ideally, each child will use the newly acquired knowledge and insight more broadly than merely within the classroom situation and will apply it to gain increasing meaning and understanding of self and society.

Within the context of this study the term 'academic performance' referred to the academic progress which each child had made, as indicated on the most recent Foundation Phase

Progress Report issued by the school. On each of these reports the child was evaluated in terms of 3 broad categories, namely, General Observation, Cultural Development and Academic Progress. Within the first two categories, the child's progress was indicated by means of comments made by the teachers. In the category of Academic Progress the child's progress was indicated by means of teacher's comments as well as by a score in the form of a number. These scores were used for the purposes of this study as an indication of the children's academic performance.

1.8.7 Reading Remediation

When considering reading difficulties, one is inevitably led to consider reading remediation. Ideally, a child experiencing difficulty with reading will be exposed to some form of reading remediation in order to assist in developing the specific reading skills which are lacking or inadequate. According to Grove & Hauptfleisch (1982:39), 'Remedial aid in reading is aimed at the alleviation of defects in the child's reading, the elimination of incorrect habits, and the rendering of assistance wherever problems are experienced. Further aims are to relieve tensions, conflicts, and inhibitions which have developed as a result of reading problems and to restore lost self-confidence'.

Within the context of this study, reading remediation for the particular children involved, took the form of one half-hour session per week with a remedial therapist, for as long as was required by the individual learner. The sessions were one-on-one and focused largely on reading skills and the fostering of a sense of achievement within the child.

1.9 Summary

Reading is a prerequisite skill for effective and efficient functioning in today's modern world. It is taught to children from the earliest stages in their formal schooling and is a fundamental building block for further learning. The focus of this investigation was on reading, or more specifically, the effect of reading on academic achievement.

The context of this study was a primary school where teachers had expressed concern that the poor reading ability in the Foundation Phase seemed to be having a negative impact on academic achievement when the children entered the Intermediate Phase. The research was carried out amongst a small, specific group of children who had been identified as experiencing difficulty with reading. The following chapter will consider the opinions expressed in the literature regarding reading and its importance in learning.

CHAPTER TWO

A REVIEW OF THE LITERATURE

2.1 Introduction

The purpose of this chapter is to consider the theoretical component of reading by reviewing the literature. This will incorporate consideration of the reading process itself. It will also include discussion around the relationship between reading and a child's academic ability and success at school and how this is borne out in the literature in the form of previously documented studies. Thirdly, attention will be given to the role of remediation and its impact on reading skills.

2.2 Reading

If one considers the typical classroom in the modern school it is clear that written text is used significantly. Although other mediums of instruction are used, much of the learning takes place in the form of reading - whether it be reading from the chalkboard, from a text book or from one's own written work. Reading plays a pivotal role in the conveying of information and new knowledge.

2.2.1 What is reading?

For the purposes of this research, it was necessary to look at the reading process itself and its various component skills. A review of the literature indicated that because of the complexity of the reading process, there is no single, absolute definition of reading.

The Penguin Dictionary of Psychology (Reber, 1995:638) defines reading as "...the process by which information is extracted from written or printed text". It goes on to say that this process is extremely complex and is dependent on two critical aspects, namely, 1) the written format of the word and the reader's ability to decode the phonetic relationships between the letters on the page and the sounds of the spoken language and 2) a semantic/syntactic process that has to do with the meaning of the words which are being pronounced.

Rosner (1979:131) defines reading as an "...act of reconvertng symbols into a language with which the individual is already familiar."

Grove and Hauptfleisch (1982:2) define reading as "...the meaningful interpretation of the written word." They add that the act of interpreting the written word is achieved through visual perception whereby the word and its meaning are recalled in the brain. Beyond that, however, the ability to attach meaning to what has been read is influenced by the reader's experience and language proficiency.

Dauzat and Dauzat (1981:6) define reading as “a process that involves mental activity embedded in other communication abilities and converts graphic stimuli (letters) into meaning”.

Kamhi and Catts (1989:5) define reading as “...thinking guided by print” and regard definitions of reading which focus on the skill of transforming printed words into spoken words (decoding), as too narrow.

Richek, List and Lerner (1983) argue that for beginner readers, word recognition and reading comprehension (direct and literal) are important, whereas for older readers underlying or indirect reading comprehension becomes more important.

From the literature, it becomes clear that the process of reading consists of two main components, namely, word recognition or decoding and reading comprehension. These will be discussed in more detail later in this chapter.

2.2.2 Broad theoretical orientations on reading

Matlin (1989) points out that up until the 1960's there was not much new information published on reading. Up until that point behaviourists were in the forefront of psychological research and minimal research was done on the topic of reading. Then, with the growing interest in cognitive psychology, this changed and research into reading started to grow prolifically.

Pretorius (2000) notes that, historically, reading research has seen the development of three approaches to reading, namely the linguistic approach, the psycholinguistic approach and the interactive constructivist approach.

The linguistic approach had its roots in behaviourism and the basic premise here was that meaning lay in the words and sentences themselves and thus was essentially 'fixed'. Reading skill, therefore, was a function of the reader's linguistic ability. This was essentially a bottom-up approach to reading in that reading was viewed as a step-by-step process, which began with the initial processing of an auditory or visual stimulus presented by the word or letters on the page. In order to read well, a reader needed to have effective decoding skills such as letter recognition and word identification. This approach to the understanding of the reading process tends to be somewhat static and mechanistic – for example, the word 'freedom' would likely have had two very different meanings, respectively, for a white person and a black person living in South Africa in the 1960's.

Towards the end of the 1960's, the psycholinguistic or top-down approach developed in response to, and as a criticism of, the linguistic approach. Psycholinguists argued that the meaning of a word or sentence is more than just the sum of its component parts. The idea here is that meaning is derived from both the words themselves and also from the broader socio-communicative context. A reader attaches meaning to a sentence based on the text itself, on the social context in which it is written and also based on his/her prior knowledge and experience. In other words, the reader attaches his own meaning to a word as opposed to the word itself dictating the meaning. Several models of reading developed out of the psycholinguistic approach to reading,

for example, Carrell and Eisterhold (1983), Schank and Abelson (1977) and Samet and Schank (1984). However, Pretorius (2000) points out that these models of reading, which emphasise the role of the reader's background knowledge, cannot fully explain individual differences in reading ability. A knowledge-based model cannot explain how a good reader is able to understand text dealing with topics of which he has no prior knowledge.

As research into reading grew, it became apparent that an effective model of reading which gives consideration to individual differences in reading, needs to account for more than just technical skill and /or background knowledge. Research by Carpenter and Just (Orasanu, 1986) and Grabe (1991) showed clearly that reading requires rapid and precise skills and emphasised once again the importance of perceptual, visual and decoding processes during reading. Pretorius (2000:32) notes that over the years, research has "provided overwhelming evidence that reading is not simply a language skill, and that background knowledge, text knowledge, context, cognitive processing, attitudes, cultural beliefs and literacy practices are all vital ingredients that need to be taken into account in a model of reading". Such models would be representative of the interactive constructivist approach to reading. This approach to reading acknowledges the importance of both bottom-up decoding skills and techniques necessary for reading, *as well as* top-down knowledge-driven comprehension processes. Reading becomes an interactive process between the written word and the reader's knowledge and experience.

2.2.3 The reading process

A variety of cognitive skills are required for reading. Fisher (1981:489) states that reading “involves sequencing of eye movements, decoding, encoding, and utilizing linguistic awareness. It demands knowledge of orthographic regularity and irregularity. It integrates letters, words, sentences, and passages with past experience. Surely reading is one of our most complex daily activities”. Consideration will now be given to some of these cognitive processes.

2.2.3.1 Word Recognition

Possibly the most obvious skill involved in reading is the recognition of the letters and the words which make up the text. Both visual and aural stimulation play a role here, in that the reader either recognises the word from the visual pattern which it presents to him, or he converts the visual stimulus into a sound stimulus. Interestingly, these two skills tie in with the two methods used to teach reading in schools. The *whole-word approach* to teaching reading maintains that readers recognise a whole word and don't identify individual letters and their respective sounds. The *phonics approach* to teaching reading argues that readers recognise words by sounding out the individual letters which make up the word (Doctor & Coltheart, 1980).

2.2.3.2 Decoding

According to Carpenter and Just (Orasanu, 1986), decoding is the process whereby the written letters and words are translated into language. When a child is first taught to read, the emphasis is usually on decoding skills. He is taught phonics and from learning the sounds of individual letters, he progresses to putting the sounds together to form words. Early-stage reading books usually contain a lot of repetition of these first simple words to encourage practise and the gradual building of a reading vocabulary. At this early stage, the child is, in effect, learning the 'code' behind the written words.

It is generally agreed amongst researchers that reading comprehension cannot occur without the necessary decoding skills having being mastered (Just & Carpenter, 1987; Vauras, Kinnunen & Kuusela, 1994; Grove & Hauptfleisch, 1982). In a sense, decoding skills are the building blocks of successful reading. They are the bottom-up skills, which form part of the foundation for effective reading. It is at the level of decoding that reading speed and accuracy come into play. A child with good decoding skills is, generally speaking, able to read with speed and accuracy, although not necessarily with good comprehension.

2.2.3.3 Comprehension

Without comprehension, reading is reduced to a mechanistic and meaningless skill. The reader must be able to attach meaning to what he is reading and he will do this largely as a function of his experience, context, knowledge and language proficiency.

Pretorius (2000) points out that decoding skill does not necessarily lead to or imply comprehension skill. There are readers who are able to decode text but who do not always understand what it is that they have read. It is on the basis of comprehension then, that one can begin to distinguish between a good reader and a poor reader. A reader who has good decoding skills but poor comprehension skills is essentially a poor reader because he is unable to find meaning in the written word. He will be unable to gain insight or knowledge from the text, he will be unable to add the new knowledge to his existing knowledge base and he will be hindered in reaching his full intellectual potential.

As stated by Beckett (2205:2) "If a child is deemed as unable to acquire functional comprehension of oral language and its associated pragmatics, and of written language and its different communicative conventions, that child will be effectively locked out of the benefits of education".

2.2.4 A developmental perspective on reading

The skills necessary for the reading process, do not all develop at the same time. In this regard, consideration was given to Chall, Jacobs and Baldwin's stages of reading development (1990). According to this model, the kind of thinking required for understanding and learning from texts changes with developmental age. The model describes six stages through which the reading process develops from learning to read to reading to learn. Stage 0 is the pre-reading stage (from birth to age 6) and stage 5 is the level of the mature, skilled reader (from age 18 onwards).

In Stages 1 (birth to age 6) and 2 (ages 5 – 9) of this model, the emphasis is on learning to read. Characteristic of these readers is that they "... learn the alphabetical principle, letter-sound relationships, recognise high-frequency words and read simple texts, mainly narratives"(Chall et al, 1990:10). Also characteristic is the fact that decoding skills are strengthened and the reading of simple words becomes more automated. Listening comprehension is also a skill being developed. At this stage, decoding and comprehension and reading rate are all equally important skills for the child to master in order to become an effective reader later on. Teaching of reading during this stage will focus on developing and improving all three of these skills.

From Stage 3 (ages 10 – 14) onwards, the emphasis shifts to reading to learn. The texts to which the reader is exposed go beyond what s/he already knows, linguistically and cognitively. The child is reading from text-books and reference notes and needs to be able to understand the text, integrate the information in the text and apply critical thinking skills. Chall's research (Chall et al, 1990) into the development of reading

skills shows that, if adequate reading abilities are not acquired during Stage 3, the consequences are severe. "Stage 3 reading skills are crucial to later academic success...Reading science and social texts becomes an almost impossible task for students who cannot read on a Stage 3 level" (Chall et al, 1990:10). At this stage decoding is no longer the focus and the ability to read effectively relies heavily on reading comprehension skills. It is interesting to note that at this level in our schools (ie. age 10 upwards), no further formal reading instruction is given. It is assumed by the teacher that these children have mastered the mechanics of decoding and pronunciation and that they are able to read to learn.

Rosen (1961:104) in her research amongst primary school readers, states that "... whereas at the earlier stages of schooling, pronunciation, comprehension and rate of reading may be regarded as equally important in assessing reading competence, as the child grows older the importance contributed by each may vary". This is borne out by Pretorius (2000) who notes that when children move into the higher developmental stages of grade 4 onwards, they start engaging more in meaning construction and gradually move away from the more automated element-by-element processing of information. At this stage comprehension would need to carry a heavier weighting when assessing overall reading ability.

2.2.5 Factors which influence reading

When investigating reading and its role in academic achievement it is pertinent to consider the various factors which could influence reading. The reader does not exist

within a vacuum and the process of reading consists of more than just a reader reading a written text. Consideration will now be given to other role players.

2.2.5.1 Language

A child uses language to express himself and he acquires knowledge and information through language, be it written or spoken. His level of language proficiency will, therefore, strongly influence his potential to learn because it is a prerequisite for his ability to read.

In a multilingual country such as South Africa this has obvious ramifications. Many of the children in our schools are being taught in a language which is their second or even third language. If the language of instruction is not the child's mother tongue then s/he is less able to use the richness and depth of mother-tongue knowledge to enhance the reading experience. Pretorius (2000) points out that there are many black pupils in our schools who have the necessary decoding skills to read English text but whose reading comprehension skills are poorly developed. Unfortunately, this has negative implications for learning because a reader's vocabulary needs to have been developed to the point where s/he will be able to understand what is being read.

2.2.5.2 Physical and intellectual development

Grove and Hauptfleisch (1982: 4) state that the child "...should be physically capable of making progress at school". In other words, his hearing and sight should be such that he is able to discriminate between different sounds and letters and words. Similarly, his speech needs to be sufficiently developed to reproduce the sounds in the language to formulate the words.

Intellectually, the child needs to be capable of both auditory and visual perception. Grove and Hauptfleisch (1982) note that, visually, the child needs to be able to compare, classify and identify similarities and differences. On the auditory level, he needs to be able to hear differences and similarities of sounds, letters and words.

2.2.5.3 Emotional development

Grove and Hauptfleisch (1982:5) state that "for reading readiness self-confidence and emotional adaptability are essential". If forced to read prematurely, the child may well develop a negative attitude towards reading. S/he will start to associate feelings of anxiety and fear with reading as well as feelings of inability and inadequacy. The challenge for teachers and parents alike is to generate a love and enjoyment of reading in children so that it becomes an activity associated with pleasure and emotional security. The role of attitude and motivation cannot be undermined.

2.2.5.4 Socio-cultural background

The *home environment* of the reader is likely to have an influence on his reading ability as well as on his attitude towards reading. The attitude of parents towards reading can play a significant role. If parents themselves read, if they make age-appropriate reading material available to their children and if they are actively involved in and supportive of their child's reading, it is likely that the child will develop a positive attitude toward reading. Trelease (1990) indicates that parents who read aloud to their children on a daily basis, help improve the child's reading abilities as well as his imagination.

In a similar vein, a home environment that is stable, secure and supportive makes it easier for the child to invest energy into an activity such as reading. A child from an emotionally deprived, disintegrated and possibly abusive home environment, on the other hand, is going to be more concerned with survival and emotional security. Investing attention and energy into reading may well seem foreign to such a child, if not impossible. In her research on early literacy skills in African-American children, Washington (2001) notes that children from homes characterised by poverty, lack of stability, inadequate nutrition and medical care and inconsistency in care, are subject to levels of environmental stress that can affect their functioning. As a result, they enter school with decreased world knowledge, which in turn can affect their language skills and influence their experience with books.

The child's *cultural experience* can also influence his reading behaviour. For example, many of the black children in our schools have a largely oral cultural heritage as opposed to a reading cultural heritage. Pretorius (2000) notes that these children are very seldom exposed to storybook reading and have very little experience of the printed word before starting their formal schooling. Books are not an integral part of their lives and this can make learning to read a difficult task.

Nel (1995) notes that cultural factors can also influence gender expectations with regards to reading. In some cultures, boys are expected to engage in non-academic activities, to be active and less attentive. The result is that less focus is placed on reading and reading difficulties than would possibly be the case with girls.

2.2.5.5 Educational factors

Even although school is usually the place where most children learn to read, it needs to be acknowledged that the school environment itself can also hinder a child's reading development.

Teachers who are critical, judgmental, sarcastic and rejecting can have a strong negative influence on the motivation of the children in their classes. If a struggling reader is criticised for slow pace or inaccuracy or inarticulation, that child will be less likely to keep trying for fear of further ridicule. Under these

circumstances it is much easier for the child to simply give up and take on the label of 'unable to read'. The path of least resistance may well be the one which feels safer and less traumatic. Sadly, the label often becomes a self-fulfilling prophecy and these children then come to expect their reading behaviour to be a 'failure'.

It can also happen that the teacher provides the child with reading material which is too difficult or too advanced or, in some cases, too easy. In both cases the reader ends up frustrated and/or bored. French (1986) points out that the interest of the reader in the reading material and his motivation to complete a task, are important factors in the reading process. If the material is interesting and age- and contextually- appropriate, it is more likely that the reader will engage with it and be encouraged to read further.

Given the pressures in many of the classrooms in our country today, it does happen that a reader experiencing difficulty simply does not receive the extra individual help, which s/he may need. With high teacher to pupil ratios in some classrooms and with underqualified teachers in others, it is very often physically impossible for the teacher to render the assistance which is needed. Consequently, the struggling reader continues to struggle.

2.2.5.6 A modern, technology-driven world

Today's children live in a world of instant information and seemingly limitless entertainment. Much of the entertainment is in the form of television, television games, computer games, handheld arcade-type games and so on. And although there is nothing intrinsically 'wrong' with any of these, they all require very little effort on the part of the individual. Any effort entailed is usually the simple pushing of buttons. In contrast to this, reading as a form of entertainment requires more effort, more imagination and requires longer periods of time. For these reasons it will not be appealing to many members of this 'instant generation'. It will not be the first choice of many young people and for many reading becomes an activity that one does only under duress and only for school purposes.

Research has also shown that from a physiological viewpoint, watching television can have a negative effect on reading because the two activities make demands on differing brain functions (Robinson, 1983). The skill needed to watch television (namely, the formation of global visual representations) is more effortless than the more complex visual and cognitive processes involved in reading.

2.3 The relationship between reading ability and academic performance

In our current education system, much emphasis is placed on the skills of reading and writing. As a result, academic success is largely dependent on literacy skills. Children who experience difficulty with reading and/or writing are likely to find it harder to reach their academic potential at school. It may be assumed by teachers that the child arriving in grade 1 has the requisite language and literacy skills needed to cope in an academic setting. For many children, however, this may not be the case.

Research has shown that students with low reading ability are generally low academic achievers (Daneman, 1991; Stanovich, 2000; Gardner, 1991; Naglieri, 2001; Saville-Troike, 1984; Wells, 1986; Kokong, 1991). Children who read effectively have access to numerous sources of written material which, in turn, enables them to increase their general knowledge, their vocabulary and their language skills (Elley, 1991; Krashen, 1993; Vivas, 1996).

2.3.1 Reading comprehension and academic performance

As described earlier, comprehension has to do with the meaning that is gained from reading. It is through this process that the reader learns. Machet and Pretorius (2003) describe the different skills and knowledge that a reader needs in order to develop reading comprehension. These include the ability to link information in a text; the ability to read between the lines and make connections between things described in the text; the ability to use background knowledge about the world and people in order to

understand and contextualise the text; the ability to distinguish between the main ideas and those which are of secondary importance; the ability to draw conclusions about what has been read; the ability to make predictions about what is being read.

Reading and, more specifically, reading comprehension, is a complex task. A good reader will master this process with ease and with little conscious effort. This is not the case for children who experience difficulty reading. For them comprehension will be problematic and this will negatively impact on their ability to learn from what they are reading.

Pretorius (2000:35) states that “Students need to be good readers in order to be able to ‘read to learn’”. She states that reading is important for learning because it gives readers independent access to information in an information-driven society and that it is also a means of constructing meaning and acquiring new knowledge. In her research amongst undergraduate students at Unisa, Pretorius (2000) found that these students had distressingly low reading levels and slow reading speeds and that the better the students were at making inferences while reading, the better they performed academically. Her findings showed evidence for differences in reading ability in relation to academic performance.

Bohlmann and Pretorius (2002:204), in their research amongst a group of students enrolled for a mathematics bridging course, found that “Weak readers are only achieving reading comprehension levels of 50% or less, which effectively means that half of what they read they don’t properly understand, with dire consequences for their academic performance.”

2.3.2 Reading skills and achievement in mathematics

Pretorius (2002) notes that while the importance of reading in the language, social and human science disciplines seems undisputed, it is generally assumed that success in mathematics and science is more reliant on logico-deductive and numerical skills. As a result, the role of reading in solving mathematical problems and understanding mathematical concepts tends to be neglected.

Pretorius (2002) undertook research amongst a group of medical students and occupational therapy students at Medunsa and in a separate study (Bohlmann & Pretorius, 2002) amongst a group of students enrolled for a mathematics bridging course. Results showed that reading ability was a strong indicator of academic performance for both groups of students. Although reading ability does not guarantee success, lack of reading ability serves as a barrier to effective mathematics performance.

2.3.3 Language skills, reading and academic performance

Washington (2001) notes that strong oral vocabulary skills, both expressive and receptive, are critical for both reading and general academic success. Vocabulary supports reading development, and both vocabulary breadth and vocabulary depth are significant.

Vocabulary breadth has to do with the number of words which a child knows. This can be easily targeted at the pre-school age and intervention at this early stage can be effective in helping children acquire words.

Vocabulary depth has to do with knowledge of multiple word meanings, contextual constraints and relational vocabulary knowledge (Carlisle, Fleming & Gudbransen, 2000). These researchers found that acquiring deep knowledge of word meanings will influence a child's academic success. Without this depth of vocabulary, children may experience difficulty grasping topical academic content.

Shaw-Ridley (2005) found that children who experience difficulty with the structural aspects or form of language often have delayed language milestones. These children have difficulty understanding the grammar of language and when they reach school level, will generally struggle with the mechanics of reading and spelling. Their processing speed may be slower as will their reading speed. They also tend to find it difficult to retain in their short-term memory what they have read. This has obvious negative implications for their ability to learn and achieve academically. According to Shaw-Ridley (2005), these are the children who are at risk for suffering from dyslexia.

Shaw-Ridley (2005) also describes a group of children who experience difficulty with the meaning and social use of language. These are children who on the face of it appear to have age-appropriate language but on closer investigation it becomes evident that their language lacks richness in terms of meaning. They may use rote

language and stereotypical phrases but have difficulty with comprehension and, later, with reading comprehension.

Snowling (2000) found that children who are poor comprehenders also tend to experience a decline in reading accuracy in the later stages of reading development. They were also found to experience difficulty with higher-level text comprehension as they experience difficulty integrating information from different aspects of the text and making inferences.

2.3.4 Cognitive skills, reading and academic performance

Although the role of language in reading has to be considered, Pretorius (2000:10) states that “language is a necessary though not a sufficient condition for skilful reading.” She adds that reading also involves massive amounts of cognitive processing including such skills as inferring, understanding, integrating, evaluating information, recognising inconsistencies, monitoring the comprehension process and using repair strategies when needed, adding new knowledge gained from the text to existing knowledge bases in memory. With such a heavy cognitive loading, it is no real surprise that research, generally, shows a robust relationship between reading and academic success.

Effective reading can indeed promote learning, whereas difficulty with reading can hamper learning. In this regard, Stanovich (1986) describes the ‘Matthew effect’. This term describes the phenomenon whereby students who experience difficulty reading

read less than good readers. Because they read less, the above-mentioned cognitive processing mechanisms are exercised less and so become less developed than they are in good readers. For the struggling readers, reading becomes a task characterised by effort and frustration which leads to lowered motivation to read which, in turn, leads to lesser amounts of reading practise and decreased amounts of exposure to print. The result of this tends to be that parents and teachers have lower expectations of these children. All of which further exacerbate the reading problem. A negative spiral develops whereby the unskilled readers read less and less and so become increasingly unable to cope with the reading demands made of them in the learning context. Their access to information is impaired, their information-processing skills are hindered and their knowledge accumulates more slowly than that of good readers.

According to Pretorius (2000) the Matthew effects in reading may spill over into the realm of academic performance with many students continuing to perform poorly and never fully developing linguistically, cognitively, textually or in terms of subject-related knowledge.

2.3.5 Reading instruction and academic performance

Pretorius (2000) notes that in South African schools generally, reading skills are taught and developed in the first four grades – usually with a strong emphasis on the developing of decoding skills. Thereafter, reading as a skill tends to be taken for granted. No further formal reading instruction is carried out and it is assumed that now that the children have learnt to read, they will be able to read to learn.

However, Pretorius (2000) points out that the transition from 'learning to read' to 'reading to learn', does not automatically take place with all children. The result is that for these children, reading develops at a sub-optimal level. As they progress into higher grades, so the texts to which the children are exposed become more expository in nature than narrative, and the content becomes increasingly more removed from their frame of reference. It becomes increasingly difficult for these readers to access, comprehend and integrate what they are expected to be reading, in order to be able to learn. In a school system where much emphasis is placed on written text (generally in the form of text books and worksheets) sub-optimal readers are likely to find it difficult to reach their academic potential.

2.3.6 Studies showing contrary findings

It can be seen from the above that the literature indicates a robust relationship between reading skill and academic achievement. However, it must be noted that there are some studies which do not support this relationship.

Strauss (1992) did research amongst first-year students at the University of the Orange Free State. Her results indicate that reading ability has no influence on academic performance. In her study an experimental group was exposed to a reading development programme while a control group was not. A before and after comparison of the academic results of both groups showed no improvement in the results of the experimental group.

Similarly, Humber (1944), in his research amongst senior university students showed no relationship between reading efficiency and academic success in courses emphasizing the natural sciences.

2.4 Reading remediation and reading programmes

2.4.1 Remedial reading instruction

For many children experiencing difficulty with reading, reading remediation or a reading programme might become an option. Grove and Hauptfleisch (1982) note that in every classroom there will be some children with reading problems. They believe that children with minor reading problems can receive corrective instruction from the class teacher but when the reading problems are of a more serious nature, the child should receive remedial aid outside of the classroom situation. The earlier such intervention takes place, the better.

Gardner (1986) describes remedial teaching as differing from normal teaching in that the emphasis is firstly on the background of the child and on underlying causes of the specific problem. The resulting remedial programme needs to be specific, realistic and attainable. It should concentrate on one or two areas at a time as opposed to many, as this is more likely to ensure success.

Foorman and Torgesen (2001) state that children at risk for reading failure acquire reading skills more slowly than other children but they need to acquire the same set of skills in order to become good readers. They describe the difference between remedial instruction and classroom instruction as lying in the manner in which the instruction is given, stating that “specifically, instruction for children who have difficulties learning to read must be more explicit, and comprehensive, more intensive, and more supportive than the instruction required by the majority of children” (Foorman & Torgesen, 2001: 206).

2.4.2 Effectiveness of remedial reading instruction

Much research has been conducted in the area of remedial reading programmes and, in general, findings seem to indicate that if carried out effectively, remedial intervention can have a positive effect on a child’s reading ability.

Kokong (1991:58) found that “Different strategies and styles can improve the reading ability of pupils and it is believed that improved reading ability will improve pupils’ academic achievement”.

Foorman and Torgesen (2001) show that research with children at risk for reading failure provides evidence that phonemically explicit interventions (ie. with an emphasis on phonics) are more effective than interventions that are less phonemically explicit. They emphasize that effective interventions should contain strongly explicit instruction in the knowledge and skills needed to read words accurately and fluently.

Scott and Shearer-Lingo (2002) conducted research amongst a group of students with emotional and behavioural disorders and found that facilitating reading fluency can have positive effects on on-task behaviour.

In a meta-analysis of intervention research, Foorman and Torgesen (2001) describe a finding that one-to-one interventions in reading have not been shown to be more effective than small group interventions. *Both* methods are a means of increasing instructional intensity for struggling readers and that seems to be a key element. In a similar vein, regarding group size, Mastropieri (2001) conducted research amongst middle school students. The intervention took the form of reciprocal peer-group tutoring. Subsequent to the intervention, performance on reading comprehension tests showed significant performance advantages for these pupils.

Some of the work carried out in remedial reading programmes is around instructing the child in reading strategies. One such strategy is that of metacognition (Stewart & Tei, 1983; Bondy, 1984). Metacognition refers to thinking about and having awareness of one's own cognitive thought processes. In the context of remedial reading instruction, the reader will be shown how to become aware of and gain control of, for example, his ability to recognise and retain main points, to reread important sections, to make adjustments in his reading rate and to self-test in order to monitor his success and effectiveness (Stewart & Tei, 1983; Winograd & Niquette, 1989). Similarly, Peterson and Van Der Wege (2002) developed a reading model to guide children to be strategic readers. Here the strategies focused on were reading for meaning (what makes sense?), attention to syntax (what sounds right?) and graphophonic awareness (do the letters match the sounds?). Allinder (2001)

conducted research focusing on oral reading instruction contrasting the effects of a specific oral reading strategy with generic encouragement to do well. Results showed that all students improved but students who used the specific reading strategy made significantly greater progress in reading.

2.4.3 Controversy around reading remediation

Although research into reading remediation shows generally positive results, it needs to be noted that it is not without its critics. Dudley-Marling and Murphy (1997) state that remedial programmes may preserve the status-quo by protecting schooling from social criticism. They investigated the Reading Recovery Programme used in America and challenged the cultural myth which states that with hard work and a good education, all citizens can hope to achieve some social and economic success.

According to Dudley-Marling and Murphy (1997:460) “the reality is that, for many people, education and hard work are insufficient to surmount the crippling effects of poverty or racial, gender, or religious discrimination”. They believe that stories of rare individuals who overcome disadvantage and achieve success do not so much demonstrate that success is possible, as much as they show the effectiveness of institutional barriers in restricting the majority access to social goods. Their opinion is that working on improving the reading of individuals might make a difference in the short-term but that long-term change needs to challenge the underlying racist, classist and sexist structures which produced so much failure in the first place.

In response to Dudley-Marling and Murphy's investigation, Johnston (1998) comments that although it is not desirable that innovative remedial reading programmes distract us from the need for real societal and educational change, such change is hard and takes a long time and will be met with opposition. Meanwhile, he believes that we still need to try and make a difference for children working within the existing power structures.

Milligan (1993) makes the point that many remedial programmes are ineffective and, in his opinion, some may even be counterproductive. He states that evidence of this lies in the number of students who, after receiving years of remedial instruction, are still not reading effectively. He believes that this may be due to policies and procedures, which are no longer consistent with current research and thinking.

2.5 Summary

In the literature in general, definitions of reading acknowledge the importance of two skill components. These are, firstly, the ability to decode the written word and make sense of the written symbols on the page and, secondly, the ability to comprehend and attach meaning to the words that have been decoded. These skills are referred to, respectively, as the bottom-up decoding skills and the top-down comprehension skills. Both are critical elements in effective reading. However, they play a differing role at the various stages of reading development. In the earlier years when the child is learning to read, both decoding and comprehension play an equally important role in

the reading process. Later, once the child has mastered the mechanics of reading, comprehension plays a more significant role in effective reading.

These same two components are reflected in the current theoretical orientations in the literature with regards to reading. More recent thinking is reflected in the interactive constructivist approach to reading which acknowledges the importance of both bottom-up decoding skills and techniques necessary for reading, as well as top-down knowledge-driven comprehension processes. Reading is viewed as an interactive process between the written word and the reader's knowledge and experience.

A closer look at the reading process itself revealed certain prerequisite skills, which include word recognition, decoding and comprehension. These skills are heavily weighted in terms of cognitive requirements and the literature is in agreement that reading is a deeply complex process. Acknowledgement is also given to other factors which influence the reading process. These include, amongst others, the reader's language proficiency, physical and intellectual development, emotional development and socio-cultural background.

The review of the literature revealed a generally strong positive relationship between reading ability and academic performance. The greater an individual's reading ability, the stronger his academic performance and the better his chances of reaching his academic potential. However, note was made of some studies which show no evidence of such a relationship.

When considering reading, and more specifically reading difficulties, it becomes pertinent to look at reading remediation. The literature generally indicates that reading remediation given to struggling readers is of benefit in improving their reading skills. The remediation should, however, follow certain guidelines such as, for example, keeping the tuition on a one-on-one basis or in small groups and designing the programme needs around each reader's specific needs.

It was, however, noted that reading remediation does have its critics. It is their belief that remediation simply allows for the continuation of the status-quo by protecting schooling from social criticism. These critics believe that remediation serves as a cover-up for the deeper underlying social issues of inequity and that if these were addressed and the systems made more equitable, then each child would have equal access to the written word.

The literature indicated a relationship between reading ability and academic performance, and the intent of this investigation was to examine the nature of this relationship within a specific context. This study aligned itself with the definitions of reading as described above, and with the constructive interactivist approach to reading. That is, it included the role of both bottom-up decoding skills and top-down comprehension skills with regards to reading.

It is important to note here that the aim of this study was to investigate the relationship between reading ability and academic performance. Although the literature review has shown that factors such as the child's language proficiency, physical and intellectual development, emotional development and socio-cultural

background do play a role in reading ability, these did not fall within the scope of this particular investigation. Similarly, the role of reading remediation given to these children did not fall within the scope of this investigation.

The following chapter will give attention to the research design and methodology which was used to carry out the investigation.

CHAPTER THREE

METHOD OF INVESTIGATION

3.1 Introduction

A review of the literature revealed that a robust relationship exists between reading ability and academic achievement. Reading is a critical skill which forms the basis for all future learning and the child who experiences difficulty reading might be hindered academically. This appeared to be the case amongst some Grade 4 learners at the school in which this study was conducted. This investigation, therefore, set out to explore the extent of this relationship amongst a select group of Foundation phase students.

This chapter describes the research methodology. It includes discussion of the sampling method used, the format of the data and how it was collected as well as how the variables were operationalised. Consideration is also given to the reliability and validity of the data. A brief description of the proposed data analysis will also be provided.

3.2 The research design

The research was conducted in the form of a correlational research design within the confines of a case study. It has been described as such for the following reasons:

3.2.1 The research design took the form of a *correlational study* because it was concerned with "... the relationships between the variables which the researcher hypothesises as being related" (Cohen & Manion; 1989:161). In this case the two variables were reading ability and academic performance. A similar design was used by Humber (1944) to determine the correlation coefficient in respect of the relationship between reading efficiency and academic success in university curricula. Coussan (1957) also carried out a similar study investigating the relationship between reading skills and mathematics achievement.

3.2.2 It was a *case study* because it was confined to "an individual unit" (Cohen & Manion; 1989:1243). In this instance, the individual unit had already been identified by the teachers and educational psychologist at the school. The study was specifically concerned with a group of Foundation Phase students at an ex model-C primary school in Gauteng and any conclusions reached as a result of this study will only have relevance within the context of this particular group of children within this particular school.

3.3 The research sample

According to Kerlinger (1986:110), “sampling is taking any portion of a population or universe as representative of that population or universe”. Ideally, researchers should apply the rules of random sampling whereby the research sample is drawn from the broader population such that each member of the population has an equal chance of being selected.

It must be noted, however, that for this investigation the usual sampling procedures did not apply because the investigation took the form of a case study. As seen in chapter 1, the researcher was working with a group of children who *had already been identified* as having reading difficulties by either the teacher or the parents. These children automatically made up the case study sample for the investigation. This type of sampling would fall into what Kerlinger (1986:120) describes as accidental sampling where “in effect, one takes available samples at hand”.

The *population* from which the sample was drawn, consisted of all the children in the Foundation Phase at this particular ex-model C school in Gauteng. Within this population, a number of children had, at differing stages in their Foundation Phase school career, been referred to the part-time school-based educational psychologist for assessment of reading problems. Following assessment, if the children were found to be reading below the level expected of their respective chronological ages, they were referred for reading remediation. The case study *sample* consisted of this specific group of children who had been drawn from the broader population.

The final sample consisted of 31 Foundation Phase students as seen in Table 3.1. The children were included in the study on the following basis:

- Each child had been identified by his or her teacher as experiencing difficulty with reading.
- Each child had been referred to the educational psychologist by either his or her parents or teachers for a scholastic assessment to investigate reading difficulties.
- In each case, the assessment indicated that the child was reading below the level expected for his chronological age.
- Each child had been referred for reading remediation.

TABLE 3.1 Case Study Sample

	Grade 1	Grade 2	Grade3	Total
Number	6	11	14	31

3.4 Data collection

The data for this investigation came from two pre-existing sources, namely, the results of each child's assessment as concluded by the educational psychologist, as well as the results on each child's progress report as issued by the school. Given that the researcher was already employed at the school on a part-time basis to do assessment and remedial work, this data was readily available and accessible to said researcher during the course of this work should the need arise. Nevertheless, verbal permission was obtained by the researcher, from both the educational psychologist and the Head of Department Foundation Phase at the school, to access the relevant data.

3.4.1 Data collected from scholastic assessment measures

During the course of the assessment by the educational psychologist, each child was assessed using various standardised assessment measures consisting of, amongst others, the following:

3.4.1.1 One-Minute Reading Test

The One-Minute Reading Test is an individually administered test which assesses the child's bottom-up decoding skills with regards to reading. The test requires the child to read as many simple two, three and four letter words as possible within a minute.

The words in the test are arranged in such a way that some words, which can be 'sounded out', are interspersed with sight words. It also includes words which can be easily misread, such as 'was' and 'on', which allows for reading reversals to be identified.

The number of words correctly read by each child within the time limit was then converted by means of a norm table. The result obtained from the norm table was a suggested reading age or age equivalent, at which level the child was reading in terms of reading rate or speed. This age equivalent could then be compared with the child's chronological age, at the time of the assessment, to give an indication of whether the child was reading at the rate expected for his age or not.

3.4.1.2 Burt Graded Reading Test

The Burt Graded Reading Test is an individually administered test which assesses the child's bottom-up decoding skills with regards to reading.

The test consists of a list of 110 words of increasing difficulty, ranging from words such as 'to' and 'is' to words such as 'subtlety' and 'poignancy'. Each child was required to read from the beginning of the list. The test continued up to the point where the child had read five consecutive words incorrectly. No time limit applied with this test.

The number of words correctly read by the child was then converted by means of a norm table. The result obtained from the norm table was a suggested reading age or age equivalent, at which level the child was reading in terms of word recognition and accuracy. This age equivalent could then be compared with the child's chronological age at the time of the assessment to give an indication of whether s/he was reading at the accuracy level expected for his or her chronological age or not.

3.4.1.3 Neale Analysis of Reading Ability

The Neale Analysis of Reading Ability is an assessment of both the child's bottom-up decoding skills and top-down comprehension skills. It assesses the reader's reading speed, accuracy and comprehension and is administered individually.

The test consists of a series of graded reading passages followed by a series of comprehension questions. Each child was required to read a passage and then orally answer the questions presented by the tester. A record was made of his answers to the questions; of the time that it took for him to read the passage as well as of the number of reading errors which he made. The child then proceeded to the next passage where the process was repeated and so on, until the permissible number of errors for the passage being read, was exceeded. At that point the process was stopped.

The result of this process was three scores – one for reading rate or speed, one for accuracy and one for comprehension. These raw scores were then standardised according to the norm tables and the result was three suggested reading ages or age equivalents for the three respective reading skills. Again, these age equivalents could then be compared with the child’s chronological age at the time of the assessment to give an indication of whether the child was reading and comprehending at the level expected for his or her age or not.

3.4.2 Data collected from school progress reports

Data was also gathered from each child’s most recent school academic progress report. More specifically, this included a record of each child’s mathematics result and overall academic aggregate, as determined by his or her class teacher.

At this particular school, teachers made use of a five point ordinal scale to indicate academic progress in each subject. The numbers on the scale represented the child’s academic performance level as follows:

1 –excellent, 2 – good, 3 – average, 4 – below average, 5 – weak.

3.5 Operational delineation of variables

From the above data sources, one measure for each variable was required in order to calculate correlations. To make each reading related variable operational, the following procedures were followed:

3.5.1 Reading Speed

From the assessment measures described above, two results were obtained for each child regarding reading speed. These came from the One-Minute Reading Test and the Neale Analysis of Reading Ability and both were in the form of age equivalents.

In order to arrive at one measure for the variable Reading Speed, an average of these two age equivalents was calculated.

3.5.2 Reading Accuracy

Reading accuracy has to do with correct word recognition and pronunciation. Here again two results were obtained for each child. These came from the Burt Graded Reading Test and the Neale Analysis of Reading Ability and both were in the form of age equivalents.

In order to arrive at one measure for the variable Reading Accuracy, an average of these two age equivalents was calculated.

3.5.3 Reading Comprehension

The measure for the variable Reading Comprehension was taken directly from the Neale Analysis of Reading Ability and it took the form of an age equivalent.

3.5.4 General Reading Ability

Here the aim was to calculate a single composite score, which was a reflection of overall reading ability. As seen in chapter 2, the literature has shown that the critical elements in effective reading include both the bottom-up decoding skills and the top-down comprehension skills. It therefore became necessary to derive a single measure of reading ability from a combination of the scores from all three reading assessment measures ie. one that included reading speed, comprehension and accuracy. The question arose as to how this combination should be weighted in terms of the three components, namely, speed, accuracy and comprehension and how they each contributed to reading ability in general.

In this regard, reference was made to work done by Rosen (1961), Pretorius (2000) and Chall et al (1990), as described in chapter 2. Children in the Foundation Phase range from age 5 years to 9 years and are still learning to read. They fall into Stage 2

of Chall et al's (1990) model of reading development where decoding and comprehension and reading rate are *all equally important* skills for the child to master.

Given the above, and in keeping with the general feeling in the literature that both decoding and comprehension skills are critical in reading, it became clear that, at the level of the Foundation Phase, reading rate, accuracy and comprehension are all equally important in the process of learning to read. They should, therefore, be given equal weighting when calculating a measure of overall reading ability

Thus to arrive at a single, composite measure for the variable General Reading Ability, an average was calculated from the three separate measures for reading speed, accuracy and comprehension, respectively. The resulting measure was also in the form of an age equivalent.

In summary, for each child the data yielded a total of 6 measures or variables, which were used to calculate correlations, namely:

1. Reading Speed
2. Reading Accuracy
3. Reading Comprehension
4. General Reading Ability
5. Mathematics Score
6. Aggregate Score

3.6 Reliability and validity

According to Huysamen (1983:25), the reliability of a test refers “to how consistently it measures irrespective of when it is administered and which form of it is used”.

According to Anastasi (1988:139), the validity of a tests refers to “...what the test measures and *how well* it does so. It tells us what can be inferred from test scores”.

For the purposes of this investigation, reliability and validity were assumed because of the nature of the two sources from which the data was sourced:

- The reading assessment data was obtained from a registered, practising educational psychologist and the assessment measures which he used were all standardised.

All three of the reading tests included in this investigation, namely, the One-Minute Reading Test, the Burt Graded Reading Test and the Neale Analysis of Reading Ability, are standardised tests for which norm tables exist. The norms represent levels which are representative of a group and can then be used as a basis of comparison of individual cases. Because these tests are standardised, their reliability and validity is inherent and can, therefore, be assumed.

- The data obtained from each child’s school academic progress reports would have been determined in line with the Department of Education’s new policy of Outcomes Based Education (OBE). In terms of an outcomes-based

approach, the curriculum will specify what is expected of the children as the outputs of education, while being flexible and open regarding the inputs needed to achieve them.

Integral to OBE is the concept of continuous or ongoing assessment whereby the teachers are continually assessing the student's progress towards the outcomes. This assessment is a process which "... begins with the identification of learning goals and ends with a judgement concerning the extent to which those goals have been attained" (Linn & Gronlund, 1995:3). At this particular school, the scale of 1 (excellent) to 5 (weak) as used on the child's academic progress report represented the teacher's assessment of the extent to which the child had achieved the specific outcome or learning objective.

What prevents this from being an entirely subjective process (and therefore neither reliable nor valid) is that fact that all assessment is done *in terms of and as a measure of* the specific desired outcomes. Given that "...the instructional goals will clearly specify the desired changes in students and the assessment instruments will provide a relevant measure or description of the extent to which those changes have taken place" (Linn & Gronlund, 1995:10), these assessment techniques could be considered to be reliable and valid. They could be considered reliable in the sense that they consistently measured the extent to which the desired changes in the child's behaviour had led to the child's progress towards achieving the outcome. They could be considered

valid in the sense that they accurately measured the desired changes in the child's behaviour in terms of what the outcome required.

3.7 Data analysis

The data analysis consisted of two procedures:

3.7.1 Descriptive statistics

For the variables Reading Speed, Reading Accuracy, Reading Comprehension and General Reading Ability the following descriptive techniques were used to provide an overall picture:

- A frequency distribution table
- A frequency distribution histogram
- Mean
- Standard deviation
- Line graph comparing the particular variable with chronological age

3.7.2 Correlations

Correlation coefficients were calculated between the following variables:

- General Reading Ability and Aggregate Score
- General Reading Ability and Mathematics Score
- Reading Speed and Aggregate Score
- Reading Accuracy and Aggregate Score
- Reading Comprehension and Aggregate Score

The correlation coefficients were then tested for significance at $p < 0,05$.

3.8 Summary

This chapter has described the research design of the study which took the form of a correlational research design within the confines of a case study. The aim of the study was to examine the relationship between the reading ability and academic performance of the children included in the case study.

To this end, single measures for reading speed, accuracy, comprehension and general reading ability were calculated from the results of the assessment measures used by the educational psychologist. Similarly, single scores for mathematics and for academic aggregate were drawn from each child's school academic progress report. These measures became the variables which were used to calculate various correlation coefficients to determine the extent, if any, of the relationship between reading ability and academic performance. Descriptive statistical techniques were also used to provide an overall picture of the reading skills of the children in the case study.

The results and discussion of the statistical analysis will be presented in the following chapter.

CHAPTER FOUR

RESULTS OF DATA ANALYSIS

4.1 Introduction

In chapter 3 the research design was expounded. The purpose of this chapter is to describe and discuss the results of the investigation in terms of the statistical techniques outlined previously.

At this point it will be useful to consider again the aim of this study, which was to investigate the relationship between reading ability and academic performance within this particular school context and with a particular group of children.

More specifically, the study aimed:

- 4.1.1 To investigate the extent of the correlation, if any, between the reading ability and academic performance of a specific group of Foundation Phase children.
- 4.1.2 To investigate the extent of the correlation, if any, between the reading ability and mathematics achievement of a specific group of Foundation Phase children.

- 4.1.3 To investigate the correlation, if any, between 3 aspects of reading (namely, speed, accuracy and comprehension) and the academic performance of a specific group of Foundation Phase children.

What follows is a presentation of the statistical analysis, which was carried out in order to pursue the above aims.

4.2 Descriptive statistics

For each of the reading related variables, namely, Reading Speed, Reading Accuracy, Reading Comprehension and General Reading Ability, a summary will be provided. Each summary will consist of a frequency distribution table, a frequency distribution histogram, the mean and standard deviation as well as a line graph showing a comparison of each variable (in the form of an age equivalent) with chronological age. This will provide a concise description of the reading skills of the children in the sample.

It is important to note that these variables all took the form of *age equivalents*, which are represented in months. As described in chapter 3, the raw scores from each of the reading tests were converted by means of a norm table and the result was a suggested reading age or age equivalent, at which level the child was reading in terms of that particular reading skill. This age equivalent could then be compared with the child's chronological age at the time of the reading assessment, to give an indication of whether the child was reading at the level expected for his or her age or not.

The *average chronological age* of the sample, at the time of their respective reading assessments, was 88.03 months or *7 years 3 months*.

4.2.1 Reading Speed

The frequency distribution of Reading Speed (as measured in the form of an age equivalent) is presented in Table 4.1 and Fig. 4.1

Table 4.1 Frequency distribution of Reading Speed

<i>Reading Speed</i>	<i>Frequency</i>
75	18
80	6
85	3
90	2
95	0
100	0
105	0
110	0
115	1
120	1
Total	31

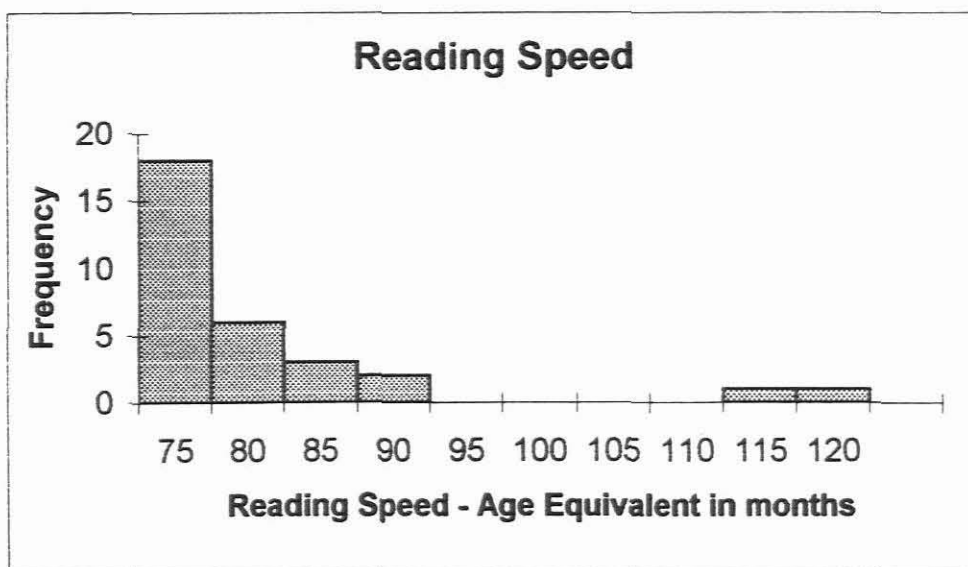


Fig. 4.1 Frequency distribution of Reading Speed

It can be seen that the frequency distribution of Reading Speed is positively skewed. A possible reason for this is that, in most cases, the children were referred for their reading assessment during their Grade 1 year ie. generally around the age of 7 years.

The children in the sample were ordered by chronological age from the youngest to the oldest and a comparison was made between Reading Speed and Chronological Age at the time of the reading assessment. The results can be seen in Fig 4.2.

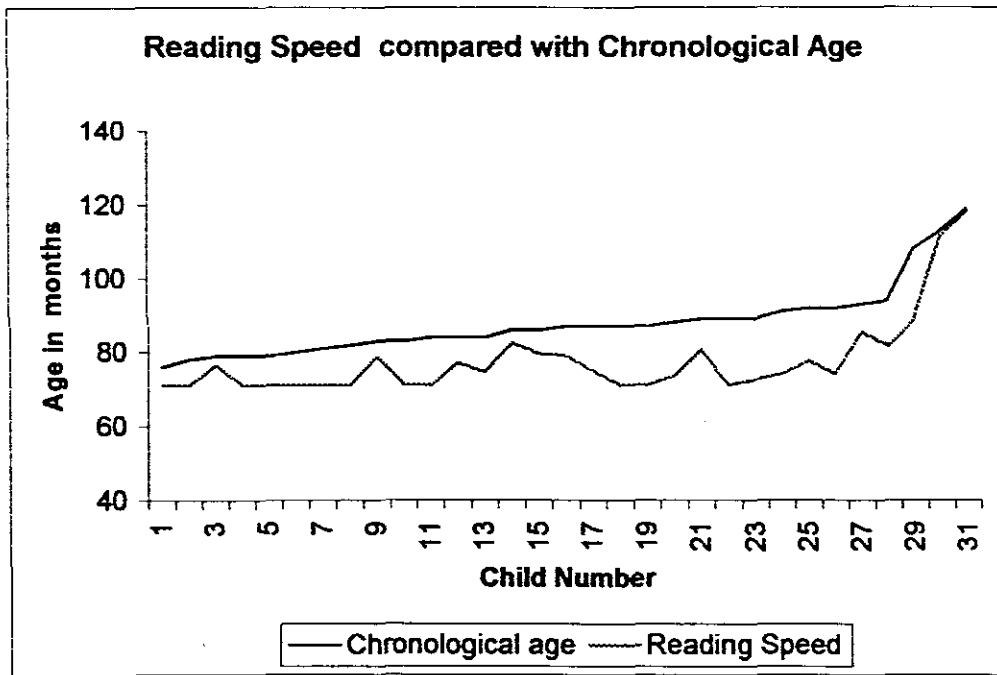


Fig 4.2 Reading Speed compared with Chronological Age

The graph shows clearly that in terms of reading speed, all of the children were reading at a level below that expected of their respective chronological ages. The mean for reading speed was 77.84 months or 6 years 5 months, compared with the mean for chronological age, which was 88.03 months or 7 years 3 months. The standard deviation was 11.07.

In the case of child number 31, however, the difference between actual reading speed and expected reading speed was slight – one month between chronological age (9 years 9 months) and reading speed (9 years 8 months).

4.2.2 Reading Accuracy

Table 4.2 and Fig. 4.3 show the frequency distribution of Reading Accuracy (as measured in the form of an age equivalent).

Table 4.2 Frequency distribution of Reading Accuracy

<i>Reading Accuracy</i>	<i>Frequency</i>
70	11
75	8
80	6
85	1
90	2
95	1
100	0
105	1
110	0
115	0
120	1
Total	31

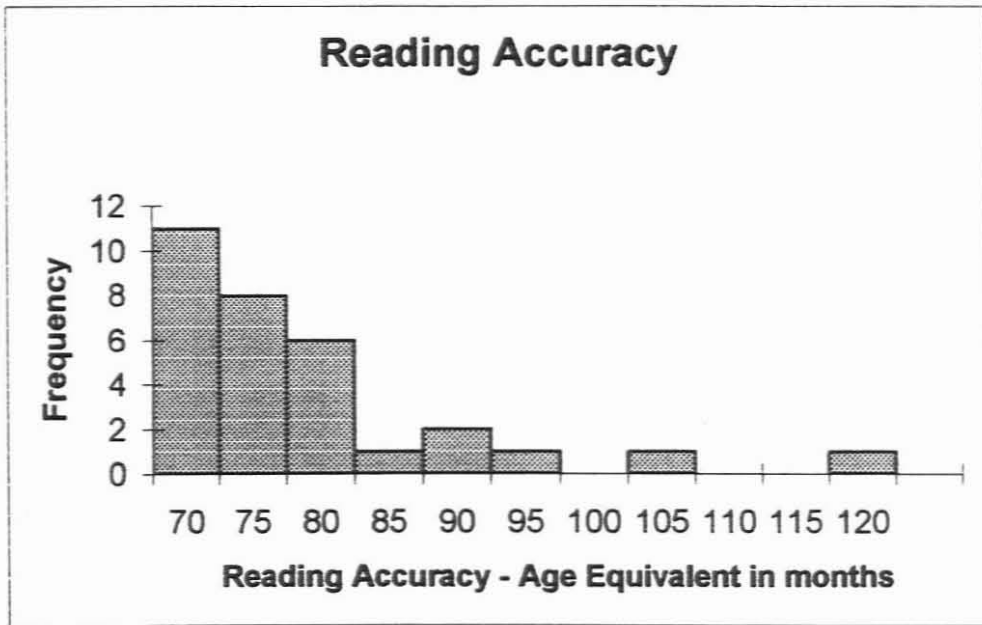


Fig 4.3 Frequency distribution of Reading Accuracy

The frequency distribution of Reading Accuracy is positively skewed. The possible reason for this, again, is that in most cases the children were referred for their reading assessment at around the age of 7 years.

Fig 4.4 shows a comparison between Reading Accuracy and Chronological Age at the time of the reading assessment.

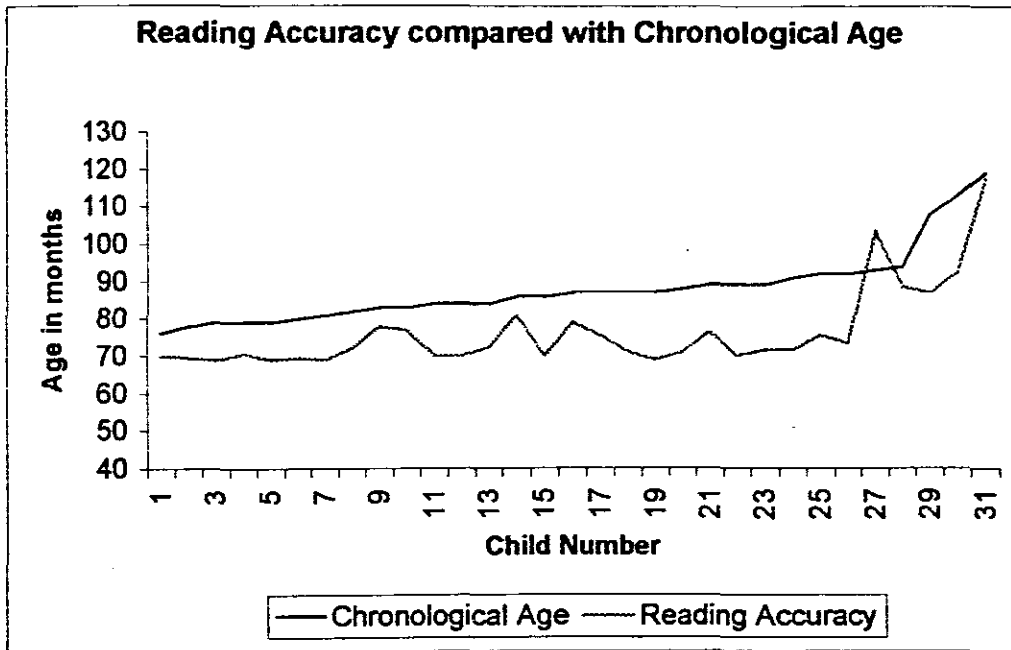


Fig 4.4 Reading Accuracy compared with chronological age

With the exception of one child, all the children in the sample were reading at an accuracy level below that expected of their respective chronological ages. The mean for reading accuracy was 76.45 months or 6 years 4 months, compared with the mean for chronological age, which was 88.03 months or 7 years 3 months. The standard deviation was 11.07.

Interestingly, in the case of child number 31, the difference again was small – one month between chronological age (9 years 9 months) and reading accuracy (9 years 8 months).

Child number 27 was reading at an accuracy level of 8 years 6 months compared with his chronological age of 7 years 7 months. Although his reading speed was below average (cf. Fig 4.2), his reading accuracy was above average. It is possible that when

no time constraints were placed on his reading, this child was better able to give his attention to the written words allowing more time to apply his bottom-up decoding skills (as described in Chapter 2) and thereby allowing for more effective reading. Time pressure appears to have had a negative effect on his reading.

4.2.3 Reading Comprehension

In Table 4.3 and Fig. 4.5, the frequency distribution of Reading Comprehension (as measured in the form of an age equivalent) can be seen.

Table 4.3 Frequency distribution of Reading Comprehension

<i>Reading Comprehension</i>	<i>Frequency</i>
70	21
75	3
80	1
85	2
90	0
95	2
100	0
105	1
110	0
115	0
120	0
125	0
130	1
Total	31

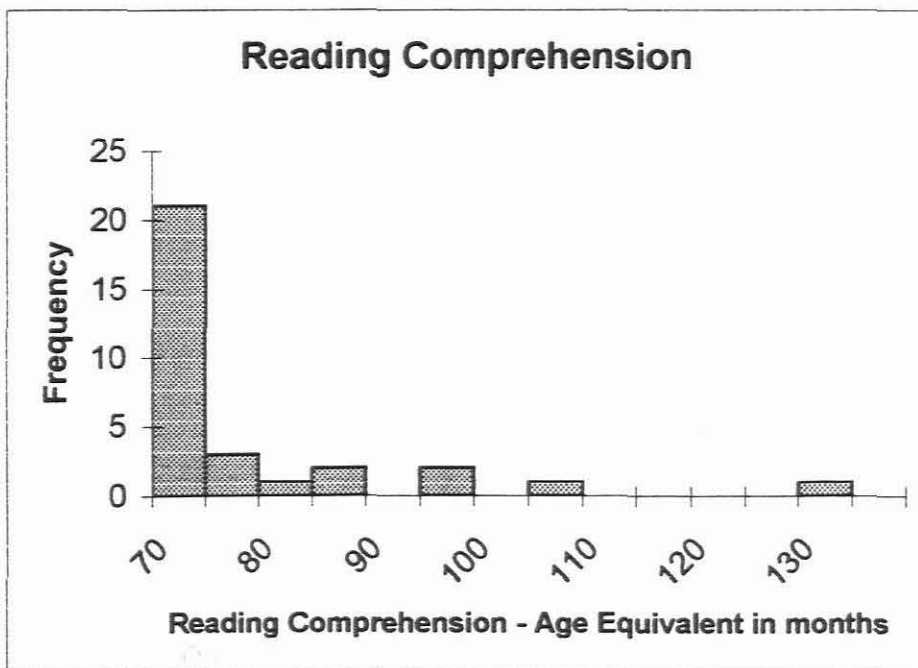


Fig 4.5 Frequency distribution of Reading Comprehension

As is the case with the above variables and for similar reasons, the frequency distribution of Reading Comprehension is positively skewed.

In Fig 4.6 a comparison between Reading Comprehension and Chronological Age, at the time of the reading assessment, can be seen.

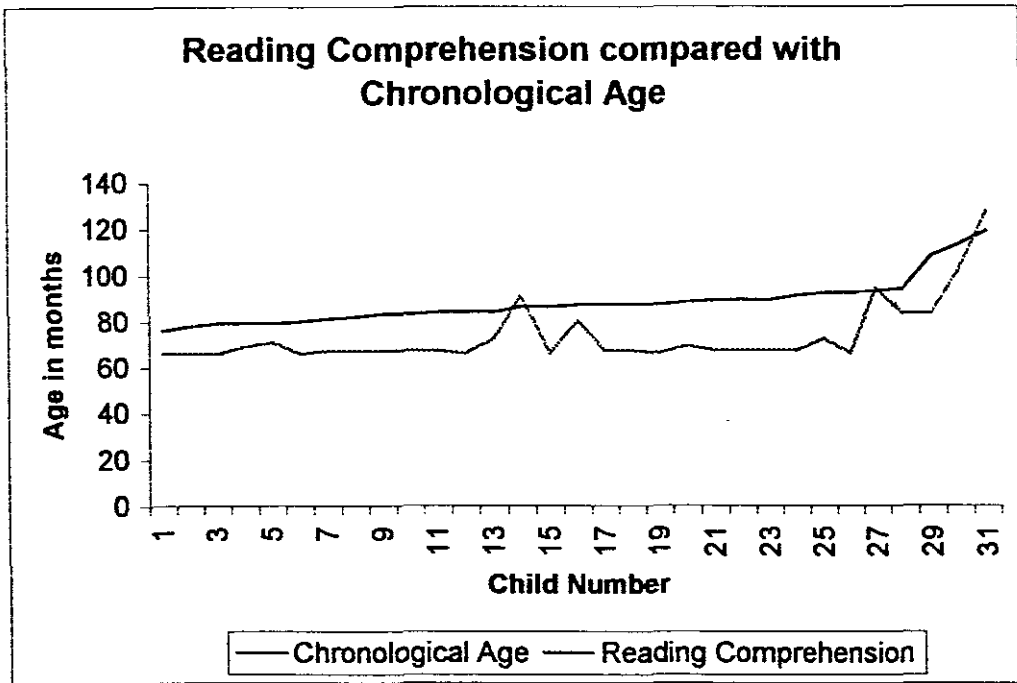


Fig 4.6 Reading Comprehension compared with Chronological Age

It can be seen that the majority of children in the sample had reading comprehension skills which were below the level expected of their respective chronological ages. The mean for reading comprehension was 73.48 months or 6 years 1 month, compared with the mean for chronological age, which was 88.03 months or 7 years 3 months. The standard deviation was 13.65. Three of the children had reading comprehension skills above the level expected of their chronological age.

Child number 27 had a chronological age of 7 years 7 months and had reading comprehension skills at the level of 7 years 8 months. This same child had above average levels of reading accuracy (cf. Fig. 4.4) yet read at a pace which was below average (cf. Fig 4.2). Again, the absence of time constraints perhaps allowed him to

read more effectively, giving him opportunity to better utilise his top-down comprehension skills, as described in Chapter 2.

Child number 14 had a chronological age of 7 years 2 months with reading comprehension skills at a level of 7 years 6 months. Child number 31 with a chronological age of 9 years 9 months had reading comprehension skills at a level of 10 year 5 months. Both children were below average with regards to reading speed (cf. Fig.4.2) and reading accuracy (cf.Fig.4.4). It appears that although their bottom-up decoding skills were not at an expected level, their top-down comprehension skills were above average.

4.2.3 General Reading Ability

Table 4.4 and Fig 4.7 show the frequency distribution of General Reading Ability (as measured in the form of an age equivalent).

Table 4.4 Frequency distribution of General Reading Ability

<i>General Reading Ability</i>	<i>Frequency</i>
70	9
75	15
80	1
85	2
90	1
95	1
100	0
105	1
110	0
115	0
120	0
125	1
Total	31

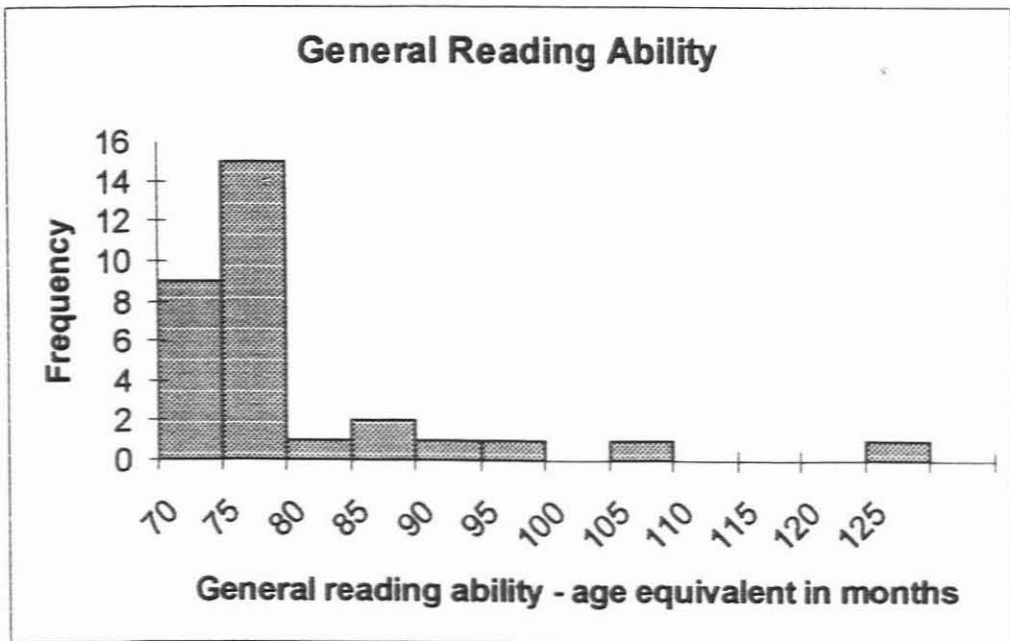


Fig 4.7 Frequency distribution of General Reading Ability

Again, the frequency distribution of General Reading Ability is positively skewed, possibly for the same reason as described above for the other variables.

Fig 4.8 shows a comparison between General Reading Ability and Chronological Age, at the time of the reading assessment.

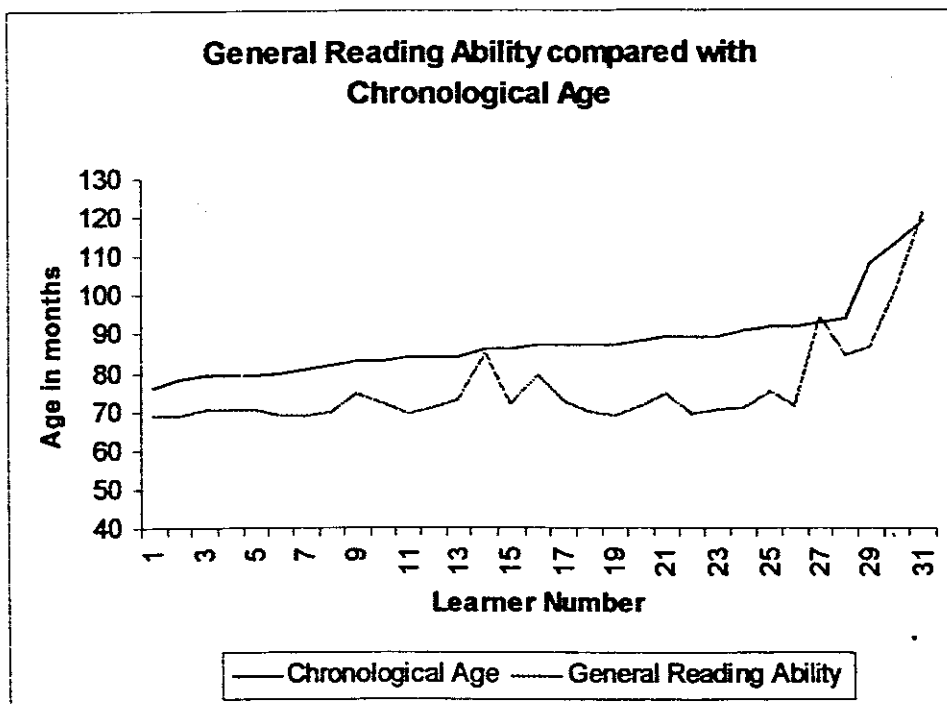


Fig 4.8 General Reading Ability compared with Chronological Age

With regards to General Reading Ability, all of the children, with the exception of two, were reading at a level below that expected for their respective chronological ages. The mean for General Reading Ability was 75.92 months or 6 years 3 months, compared with the mean for chronological age, which was 88.03 months or 7 years 3 months. The standard deviation was 11.56.

Child number 14 had a chronological age of 7 years 2 months and a general reading ability of 7 years 1 month, ie. a difference of only 1 month. It is possible that his above average reading comprehension skills (cf. Fig.4.6) were compensating for his below average reading speed (cf. Fig. 4.2) and reading accuracy (cf. Fig. 4.4). As seen in chapter 2 this is supported by Pretorius (2000), who believes that it is on the basis of comprehension that one can distinguish between a good reader and a poor reader. She states that “although both decoding and comprehension are necessary for reading, it is comprehension that is the *sine qua non* of reading” (Pretorius, 2000:8). Although child number 14 had below-average decoding skills, his above-average comprehension skills were indispensable and improved the effectiveness of his reading.

Child number 27 with a chronological age of 7 years 7 months had a general reading ability of 7 years 8 months. Although his reading speed was below average (cf. Fig.4.2), his general reading ability was above average, probably influenced largely by his above-average comprehension skills (cf. child number 14 above). At the level of the Foundation Phase the focus is on teaching the children to read and to acquire the basic reading skills. It is seldom, if ever, that they are expected to read within a time limit. It is unlikely therefore, at this stage that his below average reading speed would have impacted negatively. This may change, however, when he enters grade 4 in the Intermediate Phase. At that level the volumes of reading material increase and the children write weekly cycle tests, which have a time limit. At that point, his below average reading speed may become a hindering factor, which prevents him from completing work within the required time-frame.

Child number 31, aged 9 years 9 months, had a general reading ability of 10 years 0 months. His bottom-up decoding skills were only slightly below average (cf. Fig.4.2 & 4.4) and his top-down comprehension skills were above average (cf. Fig.4.6). Again the role played by comprehension skills can be seen here, in that his general reading ability was above the level expected for his age. At this point the question may arise as to why, in the first place, such a child was referred for an assessment because of reading difficulties when his general reading ability was, in fact, above average. It must be noted that in the Foundation Phase, the emphasis is on teaching the child to read and as such all three reading skills, namely, speed, accuracy and comprehension are specifically focused on. Although skill in decoding is not sufficient to ensure effective reading and although it does not guarantee comprehension, it is still necessary as a basis for reading ability. Therefore, in teaching a child to read both decoding and comprehension skills are believed to be important for the child to become an effective reader. It is probable, therefore, that this child's teacher observed that his reading speed and accuracy were poor, relative to his reading comprehension skills, and that this should be addressed before it had the chance to develop into a significant problem. This is possibly what motivated her referral of the child for assessment.

In summary, the children in the sample had reading skills which were generally below the level expected for children of their respective chronological ages. With the exception of certain anomalies centred around three of the children, the remaining children in the sample had not reached their full potential with regards to their ability

to read effectively. The possible effect of this on their academic potential was the focus of the next section

4.3 Correlations

In order to investigate the nature of the relationship between reading ability and academic performance, the following Pearson product-moment correlation coefficients (r) were calculated and tested for significance:

4.3.1 Correlation between General Reading Ability and Aggregate Score

This correlation was calculated in order to test the first hypothesis stated in chapter 3, namely:

There is a significant correlation ($p < 0,05$) between reading ability and general academic performance.

The results are shown in Fig 4.9.

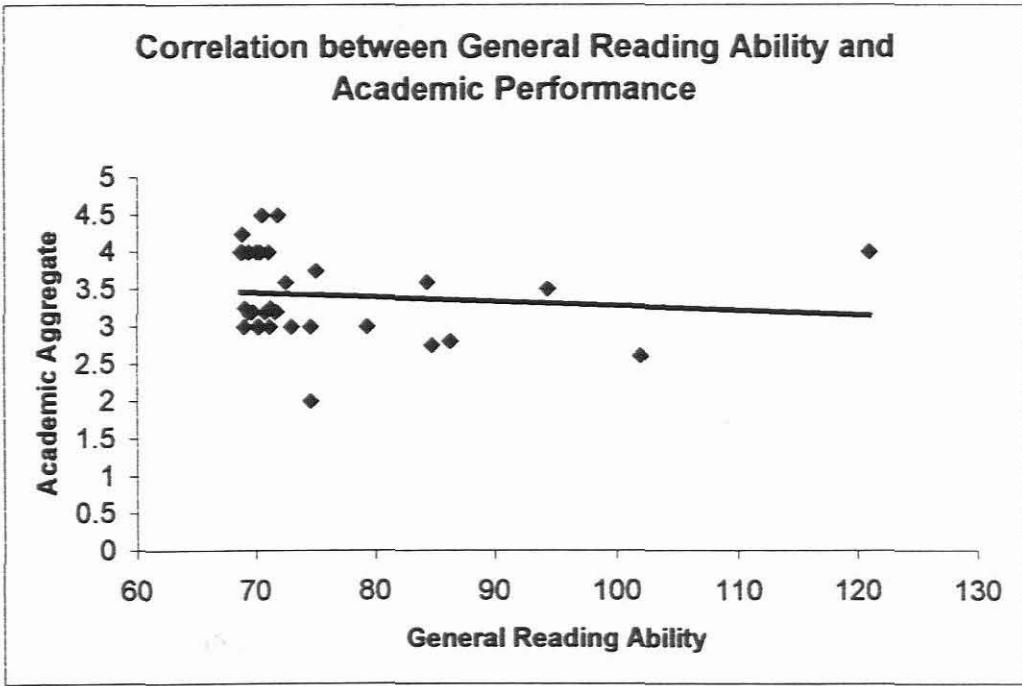


Fig. 4.9 Correlation between General Reading Ability and Academic Performance

The correlation coefficient was found to be -0.12 . A t-test was then carried out to test for significance. The t-statistic was calculated to be -0.65 which, for the tabulated value of $t = -2.045$, showed no significant correlation.

The correlation between General Reading Ability and Academic Performance was not significantly different from zero and, for practical purposes, these two variables showed no correlation.

4.3.2 Correlation between General Reading Ability and Mathematics Achievement

This correlation was calculated in order to test the second hypothesis stated in chapter 3, namely:

There is a significant correlation ($p < 0,05$) between general reading ability and achievement in mathematics.

Fig 4.10 illustrates the results.

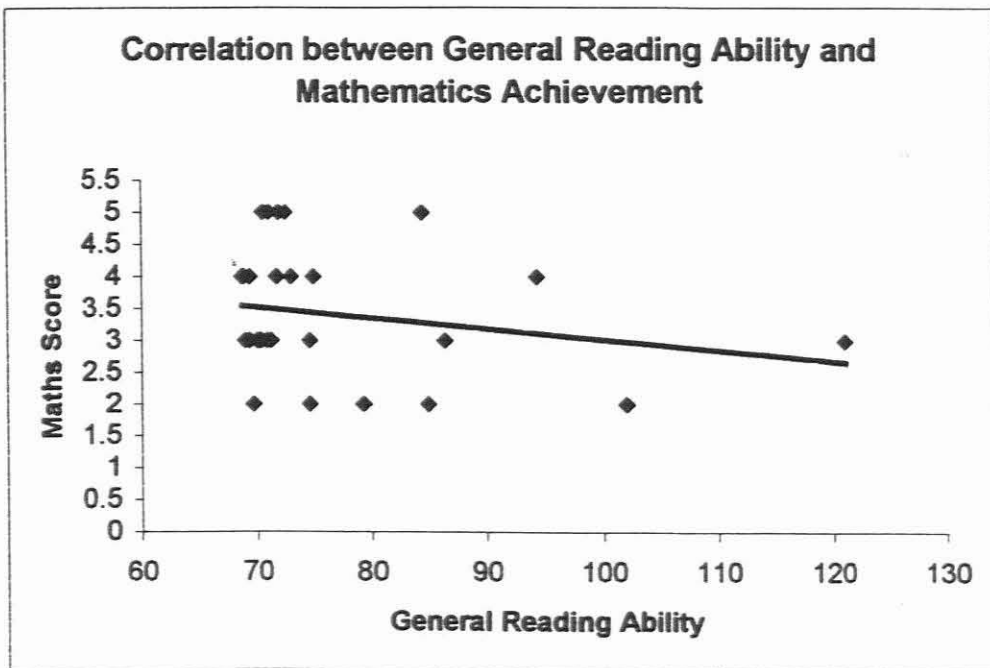


Fig 4.10 Correlation between General Reading Ability and Mathematics Achievement.

In this case, r was calculated to be -0.20 . To test for significance a t -test was performed and the t -statistic found to be -1.01 . For the tabulated value of $t = -2.045$, this showed no significant correlation.

The correlation between General Reading Ability and Mathematics Achievement was not significantly different from zero. Within the context of this particular study then, these two variables were considered to be not correlated.

4.3.3 Correlation between three aspects of reading (speed, accuracy and comprehension) and academic performance

As described in Chapter 3, hypothesis three reads as follows:

There is a significant correlation ($p < 0,05$) between the three aspects of reading (namely, speed, accuracy and comprehension), respectively, and academic performance.

In order to test this hypothesis, the following correlations were calculated:

4.3.3.1 Correlation between Reading Speed and Aggregate Score

Fig 4.11 shows the results of the correlation between each child's reading speed and aggregate score.

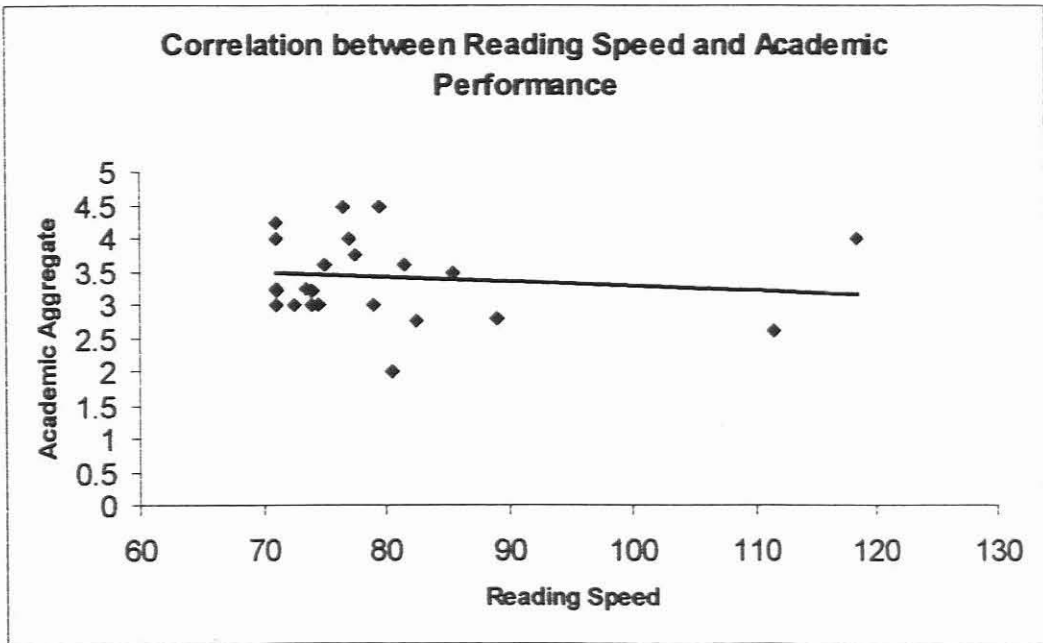


Fig 4.11 Correlation between Reading Speed and Academic Performance

For these two variables, r was found to be -0.13 . When tested for significance, the t -statistic was calculated to be -0.706 . For the tabulated value of $t = -2.045$, this showed no significant correlation.

The correlation between reading speed and academic performance was weak, and in effect, was not significantly different from zero. There was thus, in this particular sample, no relationship between the two.

4.3.3.2 Correlation between Reading Accuracy and Aggregate Score

Fig 4.12 shows the results of this correlation calculation.

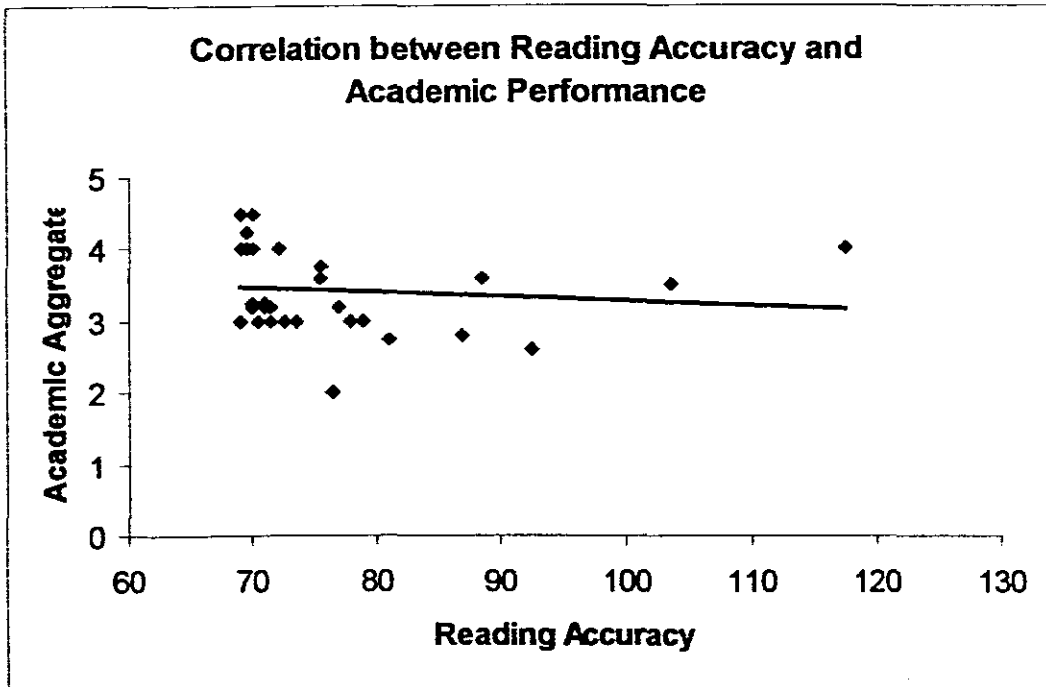


Fig 4.12 Correlation between Reading Accuracy and Academic Performance

The correlation calculation between Reading Accuracy and Academic Performance yielded a result of $r = -0.12$. To test for significance the t-test showed a value of $t = -0.65$. For the tabulated value of $t = -2.045$, this indicated no significant correlation.

For the purposes of this investigation there was no correlation evident between Reading Accuracy and Academic Performance.

4.3.3.3 Correlation between Reading Comprehension and Aggregate Score

Fig 4.13 shows the results of the correlation between each child's reading comprehension and aggregate score.

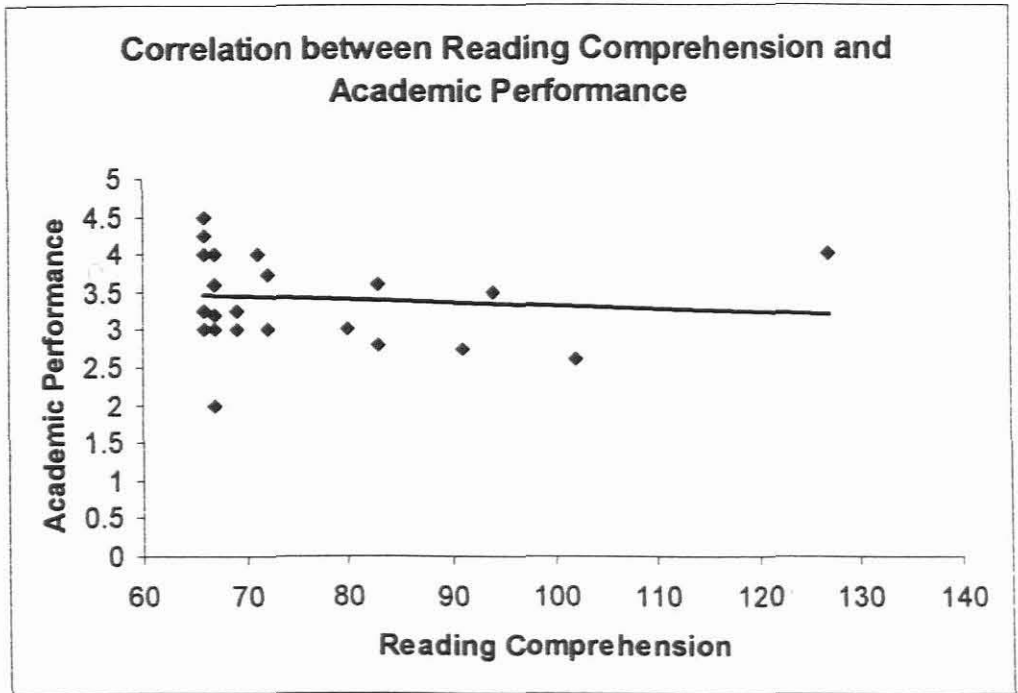


Fig 4.13 Correlation between Reading Comprehension and Academic Performance

For these two variables, r was found to be -0.10 which, when tested for significance, yielded a t -statistic of -0.55 . For the tabulated value of $t = -2.045$, this showed no significant correlation.

For these particular children in this particular investigation, reading comprehension skills and academic performance were not correlated and no relationship between the two was established.

4.4 Discussion of results

The aim of this research, as seen in chapter 1, was to investigate the extent of the correlation between reading ability and academic performance within a particular school context and with a specific group of children. The results of the correlation calculations indicate clearly that, in this particular sample of children, there was no relationship evident between reading ability and academic performance. All three research hypotheses were proven to be not true.

These results were in contrast to the overriding opinion in the literature, which is that there is a strong positive relationship between reading ability and academic achievement, as shown in chapter 2. The results of this study were more in line with those of Strauss (1992) and Humber (1944), also described in chapter 2, both of which showed no relationship between reading efficiency and academic achievement.

Various factors could have played a role in the results of this investigation. These will be considered below:

4.4.1 Developmental factors

One possible explanation for the lack of correlation between reading ability and academic performance in this case study, lies within the developmental perspective on reading as described in chapter 2. In terms of Chall et al's stages of reading development (1990), the children in the case study were in stage 2, which is the stage of 'learning to read'. During this stage reading skills are still in the process of being developed and as such their effect with regard to academic achievement is not yet definitive. This is borne out by Chall et al (1990:10) who state that "Stage 3 reading skills are crucial to later academic success...Reading science and social texts becomes an almost impossible task for students who cannot read on a Stage 3 level". Although Stage 2 reading skills are important and form the 'building blocks' of Stage 3 reading skills, it would appear that they are not quite as crucial to academic success as the later stages are. This could explain the absence of a relationship between the reading skills and academic performance of the children in this study.

This idea is given further support when one considers the original reason for this study to be undertaken. As described in Chapter 1, it was the Grade 4 teachers at the school (ie. Intermediate Phase), who raised the possibility of a connection between what they perceived to be generally poor reading ability amongst the Foundation Phase learners at the school and later academic problems. The Foundation Phase teachers were referring the children for assessments to address *reading problems* and not *academic* problems. Their concern was purely around the reading process itself and not around academic issues. However, the Grade 4 teachers were finding that a number of learners were coming in to Grade 4, from the Foundation Phase, with

reading difficulties. For a number of these children, this was then manifesting as academic difficulties as they were unable to fully access the written content of their varied subject material.

At Grade 4 level the reading demands made on the children increase greatly and it is often at this stage that a reading problem also translates into a problem of academic achievement. The transition from the 'learning to read' stage to the 'reading to learn' stage seems to be a critical one and, as indicated previously, "does not take place automatically with all children" (Pretorius, 2000:12). Chall et al (1990) describe this decline in reading skills from Grade 4 onwards as the 'fourth-grade slump' and state that it is a well-recorded fact in reading studies. This phenomenon is further supported by Hargrove, Church, Yssel and Koch (2002) who found that the academic demands at middle childhood present a great challenge to students. And as the reading demands increase, children with poorly developed reading skills fail to meet the challenges of the secondary education curriculum.

In the light of the above, it is possible that although at this stage of their school careers the children's reading is not impacting negatively on their academic performance, it is likely that, as they move from the Foundation Phase to the Intermediate Phase this will change.

4.4.2 Reading Remediation

The reading remediation given to the children in the case study could also have influenced the results of this investigation. All of these children had difficulty reading and were all given remedial reading instruction. In chapter 2 it was noted that, if carried out effectively, remedial intervention can have a positive effect on a child's reading ability, and, therefore, ultimately on his academic performance (Kokong, 1991; Foorman & Torgesen 2001; Mastropieri; 2001).

The remedial intervention which these particular children received took the form of one-on-one sessions, it provided instruction in reading strategies, used reading material that made reading easy and pleasurable and created opportunity for the reader to be successful. The remedial intervention focused on instilling a sense of mastery in the child with regards to reading and had the aim of changing the child's perspective from one of 'I can't' to one of 'I can and I am'.

For each child in the sample, some time had lapsed between the start of the reading remediation and the issuing of the school's next academic progress report. During this time the remedial intervention should have had some effect on the child's reading ability. The possibility exists that the remedial intervention had improved the children's reading ability to the point where, although not yet having a positive effect on academic achievement, it was not having a detrimental effect ie. to the point where no relationship existed between reading ability and academic success. This could be a possible explanation for the lack of correlation between reading ability and academic performance in these particular children.

4.4.3 Home and educational environment

In chapter 2, mention was made of factors which influence reading and these included the home environment and the educational environment. Because the children in the case study had already been identified as having difficulty reading, attention was already focused on their reading behaviour. Highlighting a problem in this way can have the effect of increasing levels of awareness and this could have prompted the parents and teachers to respond differently to these children with regards to their reading behaviour.

On completion of the reading assessment, the educational psychologist would have advised the parents to encourage their child to read (for example, by reading to their child, by making appropriate reading material available, by rewarding reading behaviour and so on). It is possible that at least some of the parents acted on this advice. In the classroom, the teachers might have provided more focused assistance to these children, in respect of reading, than they might otherwise have done. They may have made extra effort to provide these children with reading material that matched their interests and their level of reading ability. They may have given more praise and reinforcing responses to these children's reading than they did before.

Although these home and educational environment factors were not included in the scope of this investigation, the literature has shown that they do play a role in reading behaviour. It must, therefore, be acknowledged that they could have contributed towards the results of this investigation. By bringing each child's reading problem more sharply into focus and by generating higher levels of awareness around it,

behaviour may have taken place at home and in the classroom, which reinforced the child's reading behaviour. In turn, these behaviours may well have served to encourage the children to read and in so doing could have contributed towards improving their reading ability. Again, this possible improvement in reading could have led to the child's reading difficulty having less of a negative effect on academic achievement than would have been expected. Such a phenomenon could preclude the existence of a correlation between reading ability and academic performance.

4.4.4 Reading Behaviour

Milligan (1993:88) states "Research suggests that the most efficacious way to learn and improve reading skills is by reading. There is no other way." Common to the children in the case study was the fact that although they were experiencing difficulty reading, they were nevertheless *still reading*. They were reading in the remedial sessions, in the classroom and possibly also at home.

Because these children were still reading, it is possible that the Matthew effect, as described in chapter 2, had not yet had opportunity to fully take hold. The negative spiral characteristic of the Matthew effect had possibly not yet developed to the point where these unskilled and struggling readers were reading less and less and so becoming increasingly unable to cope with the reading demands made of them in the learning context.

This is a possible explanation for the lack of evidence of a relationship between reading ability and academic performance in this group of children. Despite their difficulties with reading, they were still having to read and had not yet reached frustration level where they were making active effort to avoid any form of reading. Because they were still reading they were seemingly still able to cope with the academic demands in their particular classroom contexts, so possibly precluding the development of a negative relationship between their reading ability and academic performance.

4.4.5 Other factors involved in academic achievement at the Foundation Phase level

As mentioned earlier, the reading demands placed on the children in the Foundation Phase are not as great as they are in the later Intermediate Phase. It is possible in this early stage of learning to read, that the children in the case study were still able to compensate in some way for their below-average reading skills. For example, they may have been relying on memory, rote learning and/or oral skills to assist them in their learning, to the extent that the reading skills deficits were compensated for.

In other words, reading is not the *only* factor involved in academic performance. As indicated by Strauss (1992), there are many other factors associated with academic success or failure. These include, amongst others, intellectual capability, areas of interest, personality factors, individual levels of motivation, self-image and self-beliefs, locus of control, and the attitude of the teacher. At the level of the Foundation Phase, another factor would be the ability to concentrate on and pay attention to the

work being done. None of these factors fell within the scope of this particular investigation and so their influence on the academic performance of the children in the case study was *not accounted for*. It is possible, however, that their contribution towards the academic performance of these children was such that it compensated for their below-average reading skills.

If one considers that the mean for General Reading Ability for the sample was 6 years 3 months, compared with the mean for Chronological Age, which was 7 years 3 months, it is obvious that their reading ability was below average. Yet the academic aggregate for the sample was 3.42 on a scale where 3 represents average. It is evident that although each of the children was a below-average reader, as a group they were not below average academically. It would seem that at this point in their school career, their reading difficulties were not jeopardising their academic potential because other factors contributing towards academic potential were *seemingly sufficient to ensure success*.

4.4.6 The data range

According to Rosnow and Rosenthal (1999), to calculate the Pearson r the data constituting the two variables need to be continuous, as opposed to dichotomous. In the case of this investigation, the data for the reading variables was continuous as was the data for the academic progress variables. However, the range for the academic variables, namely aggregate score and mathematics score was small when compared

with the range for the reading variables. This difference in spread in the data range of the two variables could possibly have played a role in the correlation results.

This phenomenon was, however, not within the control of the investigator who was working with systems which were already in place at the school. The scoring system consisting of a five point ordinal scale to indicate academic progress had been used in the school for some years. It was not possible, therefore, to obtain academic data with a range more similar to that of the reading variables.

4.5 Summary

The descriptive statistics performed on the data in this study provided clear evidence that the children included in the investigation had reading skills which were generally below the level expected for children of their respective chronological ages. Although certain exceptions did exist in some of the reading skills in some of the children, in general terms the children had not reached their full potential with regards to their ability to read effectively and the statistics presented a picture of poor readers.

The correlation calculations carried out did not produce the expected results and served to disprove all three of the research hypotheses. The results were not in line with the general opinion supported by the literature, in that the children's reading difficulties did not appear to be impacting negatively on their academic potential. A number of possible explanations for this phenomenon were considered,

acknowledging that some of these were factors which did not fall within the realm of this investigation.

The following chapter will provide conclusions and recommendations based on these results.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In this, the concluding chapter, the intention is to provide a summary of the investigation, to reach conclusions based on the results and to give consideration to the limitations of the study. Recommendations for improved practice and possible future research will also be suggested.

5.2 Summary of the investigation

This study was prompted by observations made by the researcher, during the course of assessment and remedial work carried out amongst a group of Foundation Phase children at an ex model-C primary school in Gauteng. A number of these children had below average reading ability and were struggling to meet the reading demands made of them within the classroom. This observation was confirmed by the teachers at the Intermediate Phase who had expressed concern at what they perceived to be generally poor reading skills amongst the Foundation Phase children at the school. These teachers were finding that a number of children coming in to Grade 4 from the

Foundation Phase, were experiencing difficulty reading and that, in some cases, this was leading to academic difficulties.

Meetings held with these teachers to address this problem, gave impetus to the need to research the effect of the reading difficulties on the academic performance of these children. The aims and hypotheses of the study became centred around the relationship between reading difficulties and academic performance.

Generally, the view amongst teachers and educational psychologists and anyone involved in the field of education, is that reading plays a crucial role in a child's academic success. A review of the literature revealed the general importance of reading to a child's success at school. Although some studies did have findings to the contrary, in general, the literature supported a strong positive relationship between reading ability and academic performance. The greater an individual's reading ability, the stronger his academic performance and the better his chances of reaching his academic potential.

The literature acknowledged the importance of two skill components which are critical elements in effective reading. These skills are referred to, respectively, as the bottom-up decoding skills (decoding the written word and making sense of the written symbols) and the top-down comprehension skills (comprehending and attaching meaning to the words that have been decoded). These skills play a differing role at the various stages of reading development with both decoding and comprehension playing an equally important role in the earlier years when the child is learning to read

and comprehension playing a more significant role later, once the child has mastered the mechanics of reading.

Current thinking in the literature with regards to reading is reflected in the interactive constructivist approach, which acknowledges the importance of both bottom-up decoding skills and techniques necessary for reading, as well as top-down knowledge-driven comprehension processes. However, the influence of other factors in the reading process was also acknowledged. These include, amongst others, the reader's language proficiency, physical and intellectual development, emotional development and socio-cultural background.

Consideration was also given to the views expressed in the literature regarding reading remediation. There was much strong support for the belief that reading remediation given to struggling readers is of benefit in improving their reading skills. There were also views expressed which were critical of reading remediation, saying that it allows for the continuation of the status-quo by protecting schooling from social criticism and covering up certain deeper underlying social issues of inequity.

Having reviewed the literature, this study aligned itself with the constructive interactivist approach to reading and included the role of both bottom-up decoding skills and top-down comprehension skills with regards to reading. The study itself took the form of a correlational research design within the confines of a case study, with the aim of examining the relationship between the reading ability and academic performance of the children in the case study.

The sample of children was specific and small and pre-existed in the sense that they had all already been identified and assessed as having reading difficulties and had all been referred for reading remediation. The research data consisted of single measures for reading speed, accuracy, comprehension and general reading ability, as well as single scores for mathematics and for an academic aggregate for each child. These measures became the variables which were used to calculate various correlation coefficients to determine the extent, if any, of the relationship between reading ability and academic performance. Descriptive statistical techniques were also used to provide an overall picture of the reading skills of the children in the case study.

The descriptive statistics provided undisputed evidence that the children in the research sample had below-average reading skills. Given the findings presented in the literature review, the expectation was that these reading difficulties would have a negative effect on the academic achievement of these children. However, the correlation calculations carried out did not produce the expected results and served to disprove all three of the research hypotheses. Results were such that the researcher could conclude that, in the case of this particular sample of children, no significant relationship existed between their reading ability and their academic performance.

5.3 Conclusions

The aim of this study was to investigate the nature of the relationship, if any, between reading ability and academic performance amongst a group of Foundation Phase children.

More specifically, the research hypotheses read as follows:

- There is a significant correlation ($p < 0,05$) between reading ability and general academic performance.
- There is a significant correlation ($p < 0,05$) between general reading ability and achievement in mathematics.
- There is a significant correlation ($p < 0,05$) between the three aspects of reading (namely, speed, accuracy and comprehension), respectively, and academic performance.

The results of the investigation showed that none of the above correlations were significant and all three hypotheses were disproved.

The following conclusions were drawn:

- 5.3.1 Based on these results, it could be concluded that within this particular group of children within this particular school, there was no correlation between reading ability and academic performance. Given the strong statistical evidence which showed that these children did have reading difficulties, the results of this study were unexpected in terms of the

literature, which supports a strong positive relationship between reading ability and academic performance.

5.3.2 The results led the researcher to conclude that with this particular sample, the influence of reading ability on academic performance was related to the developmental age or level of the readers. This was evidenced in Chall et al's model of the stages of reading development (1990), which placed the children in the case study in stage 2 which is the stage of 'learning to read', where their reading skills are still developing and where reading skills are not yet crucial to academic success. This could explain the absence of a relationship between the reading skills and academic performance of the children in this study. In terms of this developmental approach to reading it could, therefore, be concluded that *as yet* the children's below-average reading abilities were not critical to academic success and as such did not have an influence on their academic achievement.

5.3.3 The unexpected nature of the results could lead to the assumption that these children will progress academically, despite their reading difficulty. However, based on the literature the researcher must conclude that this will not necessarily be the case. Given the strong evidence in the literature that reading skills influence academic achievement and considering the stage at which these particular children were at in terms of the developmental approach to reading, it is likely that as they enter the Intermediate Phase the situation will

change. As they move into and progress through Grade 4, their below-average reading skills are likely to begin to have a negative impact on their academic potential. Neglecting to address this phenomenon would be doing them a disservice.

5.3.4 It must be noted that because this investigation took the form of a case study which was specifically concerned with a small and specific group of Foundation Phase learners at an ex model-C primary school in Gauteng, the conclusions drawn only have relevance within the context of this particular group of learners within this particular school. They cannot, and should not, be extrapolated and applied more widely.

5.4 Implications and recommendations

Based on the results of this investigation, the following implications may be inferred and recommendations made:

5.4.1 All of the children in the case study had below-average reading ability and all were given reading remediation, yet, as the results of this investigation showed, their reading ability did not appear to influence their academic performance negatively. The expectation had been that their reading difficulty would be impacting negatively on their academic potential. Implicit here, could be that the reading remediation provided by the remedial therapist to these children was effective in

improving their individual reading skills. It was possibly instrumental in improving their reading ability to the point where it did not impact negatively on their academics, albeit not to the point where it was impacting positively.

It is recommended that the reading remediation currently being implemented by the school, continue. Milligan (1993) describes characteristics of successful remedial reading programmes. They include such factors as having the student read, focusing on success and minimising difficulties, using age-appropriate, familiar reading materials which are of interest to the student and providing assistance early. These factors were characteristic of the remediation given to the children in the study. It is recommended, therefore, that this approach continue.

5.4.2 Despite the contrary findings of this particular study, the robust relationship between reading ability and academic performance supported by research in general must be noted. Given that reading difficulties were becoming problematic at the Intermediate Phase, it may be advisable to consider the introduction of a reading intervention, which has a broader scope than reading remediation per se. In the case of the children in the study, reading remediation was given because they had been identified as having reading difficulties. However, it was at Grade 4 level that the reading difficulties were impacting negatively on academic potential and it might be of general benefit to introduce a

reading programme for all of the learners in both the Foundation Phase and the Intermediate Phase.

Such a reading programme could function as separate and distinct from, yet complementary to, the remedial reading intervention already being provided at the school by the remedial therapist. The programme would not be focused on remediating specific reading difficulties, per se, but would serve to improve the general reading ability of the children by providing them with more opportunity to read than what is currently the case and by providing reading material which is age-appropriate and which captures their interest and imagination.

Such a reading programme could be devised in collaboration with the educational psychologist and remedial therapist. The programme should encourage the children to read, provide a sense of mastery and foster a love of reading. Such a programme could assist in improving reading skills generally and encourage a positive attitude towards reading. This could all play a positive role in easing the transition from 'learning to read' to 'reading to learn' and may help prevent the development of reading problems.

- 5.4.3 Time constraints and logistics may lead to some resistance to the introduction of such a reading programme. It might be advisable to introduce a reading programme at Grade 4 level and test it by means of a control group and an experimental group. The experimental group

would work through the reading programme while the control group would not. On completion of the reading programme a comparison of both reading results and academic results across the two groups will give an indication of the success of the reading programme. Decisions could then be taken as to whether the programme is beneficial and whether it would be worthwhile integrating at all grade levels. Given that the literature provides strong evidence in support of reading interventions, remediation and programmes, it is likely that such a programme will have positive results.

- 5.4.4 It is recommended that the teachers implement the ideas and strategies, which they themselves came up with, regarding the improvement of reading skills. During the course of the meetings described in chapter 1, the teachers of Grades 1 – 3 and Grades 4 – 7, as well as the educational psychologist involved in work at the school, identified the reading problems and areas of weakness at each grade level. They then went on to consider possible solutions to address the reading problems at each grade level. These solutions included action to be taken by the teachers, the children as well as the parents.

However, although these meetings placed the focus of the reading problem in the Foundation Phase, it is advisable that reading be addressed at *all* grade levels and not just in the Foundation Phase. Although this study has shown that reading problems in this particular Foundation Phase group do not yet appear to impact negatively on

their academic performance, the literature indicates strongly that, in time and with further development, this will not necessarily remain the case.

- 5.4.5 At this particular school reading problems only appear to be leading to academic difficulties at the grade 4 level (the stage of 'reading to learn'), and not before. This is in line with Chall et al's model of the stages of reading development (1990).

Given that there are grade 4 children who are experiencing academic difficulties as a result of reading problems, it is recommended that some form of reading remediation be introduced, post-haste, specifically for these struggling grade 4 readers. As stated by Pretorius (2000:321), "Students with reading problems get caught in a negative cycle of failed reading outcomes and non-strategic reading styles...leaving them to their own devices in the hope that problems will sort themselves out amounts to abdication of educational responsibility". It is possible that the Matthew effect has already taken hold in this group of readers. According to their teachers these children are reading at the frustration level, which in turn could lead to lowered motivation to read, lesser amounts of reading practice and decreased amounts of exposure to the written word. Intervention is recommended in order to prevent this negative spiral developing.

The intervention for this group of children should be aimed at specifically remediating each individual's reading problem with the purpose of assisting them to 'read to learn'. It could be undertaken in consultation with the educational psychologist and the remedial therapist and should include the teaching of reading strategies, actively requiring the children to read, the use of interesting and appropriate reading materials, a focus on reading comprehension skills and, above all, it should allow for mastery and should encourage the children to read and to keep on reading.

- 5.4.6 As seen earlier, Chall et al, (1990:10) state that, "Stage 3 reading skills are crucial to later academic success...Reading science and social texts becomes an almost impossible task for students who cannot read on a Stage 3 level". Implicit in this statement is that, although the reading ability of the children in this case study is not yet impacting negatively on their academic performance, the time is likely to come when it will.

It is, therefore, recommended that the progress of the 31 children included in the case study, be closely monitored by the remedial therapist, who was already working with them. It is important that their parents and teachers are updated on a regular basis as to the children's progress. Continued levels of awareness regarding their progress will hopefully mean that any potential problems pertaining to reading and and/or academic performance will be addressed timeously and appropriately. It is important that these children be given the support

and assistance which they require to be able to read to the best of their ability and, in so doing, be enabled to achieve their academic potential.

5.5 Limitations of the study

This study was prompted by a problem which already existed within a school and the researcher hoped to answer the following questions, as presented in chapter 1:

- What is the nature of the relationship, if any, between the child's poor reading ability and his ability to reach his academic potential?
- What is the nature of the relationship, if any, between the child's poor reading ability and his ability to succeed in mathematics?
- Do the differing skills required for efficient reading have a differing influence, if any, on the child's ability to reach his full academic potential?

Within the context of this particular case study, these research questions have been answered. It must, however, be acknowledged that, as with all research, this investigation had certain limitations. These limitations were as follows:

- 5.5.1 As stated in Chapter 3, this investigation took the form of a case study which was specifically concerned with a group of Foundation Phase learners at an ex model-C primary school in Gauteng. The group of children making up the sample was small and specific. As such, any

conclusions reached will only have relevance within the context of this particular group of learners within this particular school. To be able to apply the conclusions more broadly, a larger study would need to have been done.

5.5.2 Extraneous variables were not controlled. It is not possible to control for all variables which potentially play a role in academic performance such as, for example, IQ, motivation, attitude, home environment and so on. This study was concerned specifically with the influence of reading ability on academic performance. It did not control for any other factors, which could have been influential in academic performance. As was shown in the discussion section in chapter 4, some of these factors may have played a role in the results.

5.5.3 As was indicated in chapter 3, the children in the case study comprised an accidental sample and not a random one. The children were available at hand, having already been identified as having a reading difficulty. As such they were not representative of the broader Foundation Phase population.

5.6 Possibilities for further research and recommendations for improved practice

5.6.1 This study originated because of a concern amongst the teachers which was focused on the reading ability of children at the Foundation Phase level. Given the results of this particular study it might prove

informative to conduct a similar study at the Grade 4 level where the academic problem is becoming apparent. Such a study might show results which bring the relationship between reading ability and academic performance into sharper focus.

5.6.2 A longitudinal study of the 31 children in this case study will likely provide greater and more detailed insight into the long term effects of their reading difficulties on their academic performance as they progress through their schooling and possibly into tertiary education. If at a later date(s), their reading ability were to be re-assessed and its correlation with academic performance measured, a comparison of the results with the subsequent studies would give a good indication of their progress. The effect on their progress of specific interventions which might have taken place, for example a reading programme, could then be monitored as well.

5.6.3 A study similar to this one but on a larger scale (ie. with a larger sample drawn from a larger population across a number of Foundation Phase departments in a number of schools) would provide more generalised insight into the effect of reading ability on academic performance at this level in a child's schooling. Results and conclusions from such a study could be applied and interpreted more widely, as was the case with this investigation.

5.6.4 Mention was made previously of the role of extraneous factors. A study which either included or controlled for, the influence of one or more other factors known to play a role in academic performance, would produce more specific results.

5.7 Concluding remarks

Reading is a skill which pervades many aspects of modern life and invariably, in our society, it is simply assumed that individuals can read. For children who experience difficulty with reading, the effects can be debilitating in terms of their interaction with their environment. As this study has shown, at some point in their development, children's reading difficulties are likely to have a negative impact on their academic achievement. The consequences of this, not only for their schoolwork but also for their self-esteem, can be grave. If not addressed, these difficulties go with the children into their adult lives and impact on the types of positions and roles which they are able to take up as adults, as well as on the quality of the contribution which they will be able to make as active, adult members of society.

These children not only need, but also deserve, every bit of help possible to improve their reading skills. In so doing, their academic potential is also being allowed to reach its heights.

One of the books that some of these 31 children would have read from, during the course of their remedial reading sessions, was 'Reading is fun with Dr. Seuss' (Geisel,

1999). It seems appropriate, therefore, that on this subject of the relationship between reading and learning, the Dr Seuss character, the Cat in the Hat, be given the last word,

*The more that you read
the more things you will know
The more that you learn
the more places you'll go.*

(Geisel, 1999:unnumbered)

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